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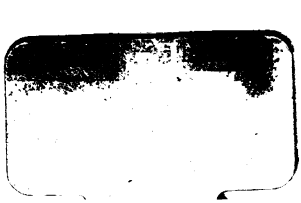

CATCHING'S COMPENDIUM

—OF—

PRACTICAL DENTISTRY

FOR 1891.

B. H. CATCHING, D.D.S.,
EDITOR AND PUBLISHER,
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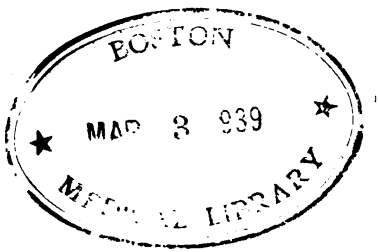
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OPERATIVE DENTISTRY.

TREATING ROOT CANALS.

DR. G. V. BLACK.

Archives of Dentistry, January.

We will suppose that a patient comes for any necessary opera- [illegible] dead pulps in teeth that have given

ERRATUM.

Last paragraph on page 52 Catching's Compendium of Practical Dentistry for 1891 should read as below.

When it becomes desirable to trim a model, after it has lain around a day or two, and so become quite hard, dip it in water for a few minutes, and it may be readily cut with a sharp pen-knife. If an impression is filled and allowed to stand over night, drop it into hot water, and the steam generated will make separation more easy. Models should always be well soaked before more plaster is added to them. If, however, it is desired to preserve a model, upon which a plate is to be vulcanized, it may be readily done by soaping it slightly and flasking it as dry as possible. With care,

apical foramen if possible, but do not drill through. Wash with sulphuric ether, pumping it through with cotton on broach where I must, but driving it through with a syringe where I can; sometimes use peroxide of hydrogen instead of sulphuric ether. In case I cannot get through apical foramen, I make the best possible cleaning of canals, apply 1, 2, 3 in canals on cotton, seal up, discharge the patient for a week to wait development. I do this also with cases in which I do get through and wash out.

BLIND ABSCESS.

In case of blind abscess, when I find pus in canals and no fistulous opening, I call it blind abscess, provided it is not acute.

Before this is learned I have applied the dam and have disinfected. (The dam is always applied before opening into a pulp chamber.) Clean the canals thoroughly and drain away all the pus possible. When there seems to be much pus pump in peroxide of hydrogen first, or simply wash canal with ether. In these cases I often pump in pure oil of cassia, using cotton on a broach, but sometimes use carbolic acid 95 per cent., and again the 1, 2, 3. Then seal up cavity with gutta-percha for a week, giving careful instructions to patient to report at any time if there is trouble. In all of these cases, if all has gone well, I fill the canals at the next sitting, put on dam and disinfect before removing gutta-percha.

WHEN ARSENIC IS APPLIED.

In case arsenious acid has been used to destroy pulp. When pulp is drawn away whole, moisten canals with eucalyptus and fill immediately. The dam was on when the arsenic was applied, and the arsenic sealed in with gutta-percha. The dam was on and the tooth and surroundings disinfected before the gutta-percha was removed. In case the pulp breaks up into shreds, making it difficult and doubtful about getting canals well cleaned, seal up for a week, leaving cotton with 1, 2, 3 in canal. Then remove this, dam on, surroundings disinfected, and fill root. The cotton generally brings away what debris there may have been left in canal. In any case in which a tooth has become sore to the touch, while arsenious acid is in cavity, the filling of root is delayed, even if the pulp comes out clean. I think it a good rule never to fill a root canal while the tooth is sore. This is what may be termed my routine treatment. In all these cases I fill the root at the second sitting, if all has gone well. When pain has arisen, or discharge of pus continues, further time and treatment is required, and the case gets out of the routine method, and must be treated according to the conditions. Sometimes a simple change of dressing and another week's probation is all that is wanted. Sometimes the medication is forced. Pure oil of cassia may be found necessary in the abscess cavity to disinfect and arouse some irritation or excitant effect; I may use 95 per cent. carbolic acid, forcing it through the fistula. This keeps the fistulæ open longer, and makes them larger for a time, giving better drainage; or, again, when some very mild measures will force eucalyptus into the abscess after washing with ether or peroxide of hydrogen.

Cases come now and then in which I make a wide cut from the outside to make free drainage. In fact, these cases that don't get well readily lead to great variety of treatment to meet the special conditions.

PULP CAPPING.

DR. J. N. FARRAR.

Dental Cosmos, August.

Carefully remove the decay from around the exposed part, and apply non-escharotic creosote (wood creosote), then carefully dry the cavity with soft bibulous paper, and varnish it with fir balsam (not pine pitch) dissolved in chloroform, which sufficiently dries in a minute or two, and leaves a hard film over the pulp; upon this film is then applied phosphate of zinc while in a condition of creamy consistency; leaving it six or eight minutes to harden, it is trimmed and covered with another lot of phosphate of zinc mixed so that it will set harder.

PAPER POINTS FOR DRYING ROOT CANALS.

British Journal Dental Science, May.

Paper used for water color drawings is boiled in bichloride of mercury one in a hundred, and when dry is cut in strips, folded, and cut in such a way as to produce a taper point of about three-quarters of an inch long with a groove running the whole length of the point.

WAX FOR ROOT FILLING—TO MAKE AND USE.

DR. W. F. REHFUSS.

Dental Cosmos, August.

Melt one drachm of paraffin and half a scruple of resin (white) in a porcelain dish, and then add the antiseptic in the proportion desired, the wax acting as a vehicle. It is then thoroughly

stirred, poured into molds and allowed to cool. Small pieces of the wax, in cone shape, are placed in the pulp-chamber, and a canal instrument or broach is heated in the flame of an alcohol lamp and inserted in the mass, thus melting it. The instrument is reheated, and inserted in the canal. The wax will flow to the apex. Quickly withdraw the instrument and the wax hardens, hermetically sealing the apical foramen.

CELLULOID DISKS AND POLISHING STRIPS.

DR. D. V. BEACOCK.

Dominion Dental Journal, July.

Celluloid disks, used at the back of sandpaper disks, serve to stiffen and keep them in shape, and adds to their cutting qualities. Any dentist can make them out of thin celluloid sheets, to be had at any milliner's store. Strips of the same material, used with fine corundum powder, make the strongest polishing strip I have ever used; the celluloid should be the rough or unglossed kind, as it holds the powder much better than the glazed or highly glossed.

PULP REMNANTS.

DR. A. W. HARLAN.

Dental Review, June.

The remains of a pulp can be digested by the use of perfectly fresh fluid extract of papaya, provided no other escharotic agent than the arsenic has been used.

TREATING ROOT CANALS.

DR. A. W. HARLAN.

Archives of Dentistry, January.

FISTULOUS ABSCESS.

Open pulp chamber, remove debris, wash the root with equal parts hydrogen peroxide and 1-1000 bichloride of mercury; inject eugenol through the root until it comes out at the fistulous opening, and fill the root at once with gutta-percha. If fistula has

been of more than two years' standing, seal cotton moistened with myrtol in the root for two weeks, and then reinject if necessary, and fill.

BLIND ABSCESS.

Open the chamber, with rubber dam on the tooth, wash the tooth with peroxide, but do not introduce an instrument into the root; place pellet of cotton in the chamber, wet with ol. cassia and myrtol, leave it about four days, and then remove the dressing, which of course was covered with soft gutta-percha, and remove the contents of the canal. Completely drain the abscess by repeated wiping of peroxide and bichloride; then place a strand of cotton, wet with cassia and myrtol in the root about one-half as long as the canal, seal without pressure, and push a hole through the gutta-percha; at the end of ten days see the patient, and, if the case is favorable, fill the root; if not, repeat the treatment for another ten days, when it will be ready for the root filling; rubber dam always in place; no water or other fluid in the tooth from beginning to finish, that you do not place there yourself. Circumstances may vary this, but the above is the general rule.

TO HARDEN CEMENT.

Dental Review, June.

Make a saturated solution of zinc sulphate in water and use it with the powder which comes with oxychloride packages and see how hard it will become. Use it as a foundation for filling or in the pulpless tooth crowns.

TO DESTROY AND REMOVE PULPS.

DR. W. D. TICKNER.

Items of Interest, August.

After the introduction of devitalizing agent, seal the cavity and let it remain sealed for forty-eight hours; then adjust the rubber dam and unseal cavity. Apply to the pulp a little fresh hydrated peroxide of iron, puncture the pulp, and absorb the blood with cotton. Wipe out cavity with cotton, moistened with oil of

mentha viridis, and if the pulp is still sensitive, place a little of the oil directly on it. Now place in the cavity, and in contact with the pulp, a pellet of cotton, moistened with a saturated solution of tannin in glycerine. Fill cavity with gutta-percha, leaving a small opening for vent, and after eight days the pulp can be extirpated nearly, or quite painlessly, and without hemorrhage.

WASHING AMALGAM.

DR. W. H. ROLLINS.

International Dental Journal, May.

One part of sulphuric acid is added to fifty of water; the required quantity of alloy is washed in this solution, in a mortar. When clean the required quantity of mercury is added and the mass rubbed together; the solution is poured off and the amalgam washed with water and dried.

CARIES TREATED WITH NITRATE OF SILVER.

DR. E. A. STEBBINS.

International Dental Journal, October.

Make of hard wood, fine, slender points that will enter very small cavities, dissolve the crystal nitrate of silver in water, dip the wood point in it and carry to the cavity. Dr. S. recommends this for caries in children's teeth. Keep the silver off the soft parts, use colored napkins and do not allow the patient to use the handkerchief for wiping the mouth.

CAPPING PULPS.

DR. A. W. HARLAN.

Dental Review, June.

Sterilize the infected dentine overlying the pulp of the tooth with myrtol, which is a diffusible oxygen carrying oil that is not very unpleasant to taste, that has a greater portion of the stearoptenes in its composition than some of the other essential oils, and

hence is of greater value as a disinfecting agent. By applying this to the infected dentine which has previously been dried by first washing with a solution of sodium fluosilicate, a solution of bichloride, a solution of glycerine, or of boracic acid, then drying it so that the oil will be able to diffuse itself and destroy any septic or poisonous matter there, leaving it in for a sufficient length of time to accomplish that object before the capping is introduced; that time will not be less than three days, and possibly it will take a greater number of days. When the capping is introduced it is done as follows: The rubber dam is adjusted over the tooth before the dressing is removed, so that no saliva, dirt, or mucus, or food gets in there, and a heated instrument is introduced into the gutta-percha so that there is no possibility of carrying infection into the cavity by means of an instrument. The cavity is thoroughly dried and it is varnished with copal-ether varnish. Put in the oxysulphate of zinc in a thin layer which is allowed to harden; cover it with the oxyphosphate which is harder and let it fill the whole cavity for the time being. Before the patient is dismissed, the surface of the oxyphosphate is varnished, and the varnish is allowed to dry, and then the rubber dam is taken off.

RECEDING GUMS—OPERATION FOR.

DR. A. W. HARLAN.

Illinois Transactions.

Cleanse the root of all foreign matter, and make a crescentric incision through the gum to the alveola process; fill the incision with granular resorcin, which will cause the wound to distend and fill with cicatricial tissue.

GUTTA-PERCHA TEMPORARILY USED.

DR. A. W. HARLAN.

Dental Review, February.

For pressing the gum away from a root preparatory to crowning, a part of the gutta-percha is worked into the root canal, a piece nearly the size of the crown of the adjoining teeth is worked into

place on and around the root; by means of a figure 8 ligature passed around the adjoining teeth, it may be tied in place. In a few days the margin of the root can be easily seen and operated upon. If the adjoining tooth is missing, he suggests the plan of Dr. Chupein, which is to insert a common tack in the root and pack the gutta-percha around it.

For stopping for the retention of medicaments over exposed pulps, he uses chloro-percha on cotton.

By filling two adjoining approximal cavities with one mass of gutta-percha and allowing it to remain several days, the cavities are kept clean, the gum is pressed out of the way gently.

RUBBER DAM HOLDER.

Dental Record, March.

Mr. Platt recommends a piece of small hollow wire, to be obtained of jewelers, fitted with a bead head, which is slipped between the teeth, then a short pin with a bead head is slid into the tube.

NON-IRRITANT OXYPHOSPHATE.

DR. C. SILL.

Dental Cosmos, July.

By mixing one part of petrolatum with eleven parts of oxide of zinc and then combining with the liquid, makes a cement non-irritating and very hard.

A CEMENT FOR CAPPING PULPS.

DR. W. H. ROLLINS.

Arch ves of Dentistry, July.

In covering thin dentine over a pulp we have needed a non-irritant, strong cement, which, though mixed thin, would harden quickly.

By calcining magnesium nitrate an oxide is made. This, when hydrated, forms a durable cement. When mixed with phosphoric

acid it hardens at once, growing so hot as to burn the hand. As basic oxide of zinc forms with phosphoric acid, a slower-setting cement, the indication is plain. I have used for pulp-capping and temporary filling the following mixture:

Basic oxide of zinc..... 2 parts.
Oxide of magnesium..... 5 "

Grind them together. For use, mix to a paste with sirupy phosphoric acid. This sets in thirty seconds.

PULP TREATMENT AFTER THE USE OF ARSENIC.

DR. MCINTOSH.

Dental Review, June.

Prefers equal parts of wood creosote and oil of cloves. He says its action is as good as tannin and does not discolor the tooth.

FILLING WITH AMALGAM.

DR. W. H. DWINELL.

Dental Cosmos, February.

After mixing, remove excess of mercury and wash with carbonate of soda; when excess of mercury appears during filling, take a piece of the amalgam in the pliers and hold it over the spirit lamp, thereby evaporating the mercury; use it in finishing the filling. It readily takes up the excess of mercury on the filling and makes a hard finish.

MEDICATED CHLORO-PERCHA FOR PULP CAPPING.

DR. F. E. COOMES.

Dental Cosmos, March.

In half an ounce of chloroform dissolve small pieces of gutta-percha base-plate to about the consistency of thick cream, and to the solution add five drops of carbolic acid, ten drops spirits of camphor, and five drops oil of cloves. In a case of bare pulp

exposure, or if it be nearly exposed, apply the rubber-dam, dry the cavity with softest spunk, dip a small instrument in the solution, and apply to the point of exposure, taking care to flow the fluid over the pulp without any pressure. So soon as the pellicle has dried, take a little disk of letter-paper, wet on one side with the solution, and gently lay that side over the pellicle. Add like disks until the thickness over the exposure is sufficient to resist slight pressure. The cavity may then be filled with cement or amalgam. When gold is to be used for the filling, add a small metal cap perforated to let out the surplus solution and to avoid the slightest pressure on the pulp. The solution is a non-irritant, and in an emergency use it for the relief of odontalgia from exposed pulp, first applying a little carbolic acid, and then flowing over the exposure a small quantity of the medicated chloro-percha.

OBTUNDING SENSITIVE DENTINE.

DR. GEO. F. EAMES.

International Dental Journal, March.

Put on the dam, secure perfect dryness by using warm air, and apply cocaine dissolved in chloroform. A ten per cent. solution is effective.

CAVITY LININGS.

DR. GEO. F. CHENEY.

Dental Cosmos, January.

Recommends thin sandarac varnish as the best means to prevent thermal changes affecting the pulp.

CEMENT AND AMALGAM MIXED.

DR. W. D. MILLER.

Dental Cosmos, January.

Mix the amalgam in the usual manner, avoiding an excess of mercury, whereas the cement is mixed perhaps slightly thinner than usual; the two are then thoroughly incorporated by means of a stiff

spatula. The amount of amalgam used is, in bulk, about one-third to one-half that of the cement. The material may also be prepared by simply dropping the amalgam already mixed into the liquid of the phosphate cement and then incorporating enough powder to make a stiff paste. The filling is inserted in the same manner as a simple cement filling.

HAND-PIECE PROTECTOR.

DR. J. D. ENNIS.

Dental Cosmos, January.

To prevent polishing powders, saliva or water from entering the hand-piece, use a small rubber polishing-cup slipped over the mandrel or bur.

LINING CAVITIES FOR AMALGAM FILLINGS.

DR. W. N. MORRISON.

Archives of Dentistry, May.

Line cavities to be filled with amalgam, with one or two thicknesses of gilded platina foil. (R. S. Williams') No. 4, shade 3, is what I have been using; crowded hard against the walls, they will have the appearance of gold fillings and will not stain the tooth; the mercury does not act on platina.

PAIN AFTER EXTRACTION.

"H."

Dental Cosmos, March.

A careful and thorough examination of the alveoli should invariably follow the extraction of a single tooth or of many teeth, because the thin process is apt to be fractured in the operation, and the spiculæ should be at once removed. The sharp edges of the alveoli should be smoothed with a round engine-bur, and any loose points of gum-tissue be cut off with the Quinby scissors. After a few minutes' delay to allow cessation of the incidental hemorrhage, a little tampon of cotton wound on the thin, flattened, and curved

end of a suitable instrument should be wet with phenated camphor, and the root-sockets as well as the lacerated gums be gently and thoroughly bathed with the antiseptic and detergent fluid. This will at once assuage the pain that usually follows extraction, and will furthermore aid in effecting a rapid healing of the wounded parts without the pain commonly consequent upon frequent failures to complete the surgical operation of which mere tooth-extraction is but a part.

EROSION.

DR. JAMES TRUMAN.

International Dental Journal, March.

Erosion is caused by the acid condition of the oral secretions during the hours of sleep; that secretions, during the day, in mouths so affected are generally neutral, while at night they show acid reaction.

Treatment.—Pack about the teeth so affected, at night, prepared chalk.

NITRO-CELLULOSE FOR ROOT FILLING.

DR. ALLAN.

International Dental Journal, January.

Dissolve nitro-cellulose in two parts of ether to one of alcohol, to make a thick paste. The root is to be thoroughly prepared; when ready, wipe it out with a mixture of two parts of ether to one of alcohol; take shreds of cotton that has been treated with one to one-thousand bichloride of mercury solution, dip them into the cellulose and carry into the root and pack.

TEST FOR ROCKING FILLINGS.

DR. H. H. JOHNSON.

Southern Dental Journal.

A good test for rocking, after a filling is well under way, is to take a strip of gold, say an inch in length, and tacking one end on near the center of the filling, allow the strip to stand off at right

angles to the tooth. Then by placing the point of the plugger first on one side then on the other and tapping with the mallet, if there be any rocking at all the outer end of the strip will be perceived to move from side to side through space, as the filling is alternately tapped.

PULP CAPPING, BORACIC ACID.

DR. W. H. JACKSON.

Dental Cosmos, March.

Wash out the cavity with a solution of boracic acid, so as to be sure that all the fresh blood is removed, and while it is still moist, lay a small scale of dry boracic acid over the exposed portion, and then fill with cement.

REMOVING INSTRUMENT FROM NERVE CANALS.

DR. WILLIAM CONRAD.

Archives of Dentistry, April.

Succeeds often with nitric acid diluted, applying it with cotton on a gold broach.

CURING TOOTHACHE AND SAVING PULPS.

DR. T. B. WELCH.

Items of Interest, August.

Have on hand equal parts carbolic acid (not creosote, for we want the coagulable effect of the former), and oil of cloves, made into a thin paste with tannin. When a patient comes with the toothache from exposed pulps, the tooth cavity should be first filled with loose cotton saturated with chloroform, and almost immediately this should be removed and a small quantity of this paste, on cotton, placed on the exposed pulp and covered with sandarac varnish. The chloroform generally removes the toothache almost instantly,

but it will soon return if the paste is not applied. In fifteen minutes' examination and treatment of the pulp can take place without trouble.

If the pulp is to be preserved, the loose debris just over it should be carefully removed, and the walls thoroughly prepared for filling, but the soft layers of dentine found over the pulp should not be removed. Place a very little more of this paste on a small piece of note paper over the foundation of the cavity, and cover this with thin oxyphosphate. When this has hardened, the rest of the cavity may be filled with metal.

OILING DISKS AND BURS FOR FINISHING FILLINGS.

Dr. C. F. Hartt says oil the sandpaper disk for finishing fillings.

Dr. T. W. Brophy says oil the burs for finishing gold fillings.

CEMENT WITH IODOFORM.

Odondographic Journal, April.

For deep cavities, Dr. Hofheinz mixes one-fourth iodoform with cement. He claims for it lasting antiseptic qualities.

CEMENT AS A RETAINER FOR GOLD AND AMALGAM FILLINGS.

AMALGO-CEMENT FILLINGS.

The use of cement as a retainer for fillings is quite common. Some mix amalgam fillings and cement and fill the cavity nearly full with it and finish with amalgam. Others anchor the first piece of amalgam in cement and add the remainder of the amalgam. In many cases no retaining pits or grooves are made, the adhesion of the cement being relied upon to hold the filling. With gold fillings, the first pellet is set in cement; after it sets, the gold is built

upon it. Dr. R. H. Hofheinz says he fills cavities with amalgo-cement successfully in which amalgam alone would not stay on account of shape of cavity. He prefers in many cases, especially in children's teeth, to use tin filings instead of alloy, filing them from a block of tin.

MIXING AMALGAM AND CEMENT.

DR. D. B. MCHENRY.

Ohio Journal Dental Science, September.

Take coarse grain or granulated alloy sufficient quantity, mix up a thin paste of cement; into this incorporate the alloy until you can manipulate between the fingers; fill the cavity; it soon hardens; dress down with corundum points or wheels to smooth surface; with a small quantity, then, of freshly prepared amalgam (old way with mercury) with round or flat-sided burnisher burnish over a thin coating of amalgam. You will find this free from shrinkage, discoloration, less affected by heat and cold, and strong edge strength. The keeping of the cavity dry, until it sets, is of great importance, and the finishing up of the filling at the same sitting another advantage.

SENSITIVE DENTINE.

Chloride of zinc is still one of the best remedies.

THE GENESIS OF THE CONTOUR FILLING.

DR. GEORGE S. ALLAN.

International Dental Journal, August.

Individual judgment largely controls practice in all cases, and the wise dentist, like the wise physician, always adopts the elective motto. As the size of the cavity increases, the difficulties and dangers increase, not proportionately, but in a geometrical ratio, and

therefore a relatively greater care and attention must be given to all the details of the larger and more complex operation.

As the architect or engineer sees his completed work before the actual is even started, so should the dentist be able to discern the full size, shape, and figure of his proposed restoration, and each step should be so carefully planned and made to fit the next that, in the completed whole, nothing may be wanting.

Deep undercuts, though they make operations easier, are seldom called for, and endanger the completed work, and this they do in two ways—first, by weakening the walls of the cavity, and secondly, by making real obstacles to forming a homogeneous, well-packed filling. Where all the walls of a cavity are standing, and the face of the tooth adjacent to the cavity is perfect, the walls of the cavity should be left as nearly parallel as possible, and no pits of any kind made. In fact, nearly parallel walls should be the rule, and pits always avoided when possible.

Believing fully as I do, that overlapping gold is gold in a dangerous position, I would strongly advocate such a preparation of the cavity as will minimize this danger, even if, by doing, the full realization of our ideal in contouring be not carried out.

It is a sort of belief with many that, in all cases, the packing of the gold should be commenced at the cervical wall or base of the cavity. This is a mistake. Oftentimes more certain and rapid work can be done by starting the filling back in the grinding surface, and building downward. And so this point should be considered, and the cavity shaped accordingly.

I advocate the complete removal of the thin edge of enamel often found at the neck of the tooth; for the double reason that it is only slightly adherent to the dentine just there, and so liable to split off during the operation of filling, and secondly, it is very difficult to make a smooth edge on it. The quality in gold that we make use of in building up a filling of this character, viz: its welding property when pure and freshly annealed, is one that cannot be trifled with. It is our servant if we handle it rightly; our master if we slight it in any particular.

The amount of force used must always be proportionate to the size of the pledget to be packed, and exactly, too; not enough force fails to insure solidity, and too much has a tendency to bring out the harsh qualities alluded to. As the pellet must be packed in

the exact position in which it is first placed, and cannot be moved from it, great care and good judgment are required to avoid pits, and to make certain that the surface is kept even, for it is much more difficult to fill a pit or sharp depression than to continue a flat surface, and the permitting of pits near the walls of the cavity is especially to be avoided, for the extra force necessary to fill them too often weakens the walls or even crumbles the enamel. So the rule to be observed is, as far as possible, to carry a uniform surface upward, and, as the filling grows, keep the marginal portions a little in advance of the centre. Another advantage that results from this plan of procedure is that it makes more rapid work possible, in that you can use larger points. A pit or depression near the walls necessitates the employment of small points, for the point in use must always be a trifle smaller than the pit to be filled.

Where to start a filling is a matter of some moment. It is generally commenced at the cervical wall, but cases frequently occur where the commencement may be made with advantage back on the grinding face of the tooth, and the filling carried backward or forward to the floor of the cavity. An advantage frequently arises from this method, for, by carrying the gold along the sides of the cavity towards the bottom, any movement of the gold is avoided, and pits to accomplish this same purpose are not required.

What has been said regarding the manner of making a filling leads naturally to a consideration of the points to be used, their shape, and the best methods of applying the force necessary for condensation of the gold. If the gold is to be built up layer by layer, in a series of planes, the points themselves, in fact, should have flat surfaces.

A round point may have some limited utility at times, but never can be relied upon to any extent. It would be a matter of the greatest difficulty to make a large, uniformly-packed filling by their use only. Deep serrations are faulty, in that they cut the gold and require extra power to force the gold into a solid mass. How to apply the requisite pressure is now to be considered, and possibly it is the most important consideration of all. How to apply just enough force for the purpose, and to apply it quickly and uniformly and evenly.

To-day the mechanical mallet is slowly but surely coming to the front, and the writer feels certain that the day is not far distant

when it in some of its modifications, will supersede all others, and for reasons that will now be stated as clearly as possible.

Let it be premised that the more closely the force required can be made to simulate hand-pressure the better it will be in all ways—safer for the tooth and easier for the patient to bear. Now, this is just what the mechanical mallet does—in truth, it is pressure intermittently applied, and in nowise is to be likened to the hammer-like blow that is given either by the hand-mallet, the automatic, or the electric.

A valuable point I have observed is that where the serrations of the point are rightly made—that is, having one side longer than the other—the point travels over the surface of the filling and has simply to be guided by the operator, so that if placed near the conter of the filling it will move over the face of the gold in just the direction and manner required; thus it becomes the easiest thing in the world to pack towards the walls of the cavity. The gold is plastered in position, as it were, easily and rapidly.

A few words in closing. The finishing is a matter of detail, and often of sad neglect. Too high a polish cannot be given to the perfected work. Do the best we can, and we will fall short of Nature's model. Time and labor cannot be thrown away, if intelligently employed in the finish.

Where a tooth has been mutilated by disease, or the file and disk, a question often arises as to whether the gold shall be allowed to overlap the edges of the cavity, or simply be rounded out from them. It is doubtful whether gold can be made to lay against the tooth-substance in such a manner as to prevent the ingress of fluids. The thinner and wider the overlapping gold, or the thinner and deeper the overlapping gold, the greater the doubt and uncertainty. If the diameter of the gold is one-third or one-half greater than that of the cavity, we may be almost certain of trouble in the near future.

The difficulty in making a perfect edge is also greatly increased in these cases, and so it is a safe rule to observe to finish the gold to fit the cavity, and to take the place of an overlapping lid as little as possible.

In shaping, the articulation should be always left in such a condition that the filling should, in mastication, be pressed back into the tooth, not out from the cavity.

GUTTA-PERCHA AND ALLOY FILLING.

DR. BUTLER.

N. Y. Transactions.

Dr. Butler says he has filled successfully some bad cavities by first filling with gutta-percha and dissolving the surface with a drop of chloroform and adding fine alloy, burnishing it in.

OVERLYING GUM THIRD MOLAR.

DR. A. W. HARLAN.

Dental Review.

Take a long pair of curved scissors and slit the gum back beyond the distal side of the molar, and then clip off generous quantities of the gum on either side, and then treat the surface with ethylate of sodium to still further destroy the tissues that may be inexpedient to get at. Ethylate of sodium will destroy tissue without injuring the tooth.

ARRESTING HEMORRHAGE.

DR. B. W. RICHARDSON.

British Journal Dental Science, February.

Recommends disks made of gutta-percha saturated with a styptic, tannin or perchloride of iron, softened in warm water and pressed in the socket from which the tooth has been extracted.

IMMEDIATE EXTIRPATION OF THE PULP.

DR. JOHN C. M'COY.

Archives of Dentistry, August.

The pulp must be really exposed, opening sufficiently large to admit a large size hypodermic point. The larger the exposure the better you will succeed. A first-class hypodermic syringe, with both strait and curved points, with points cut square at the ends.

Not the smallest points—larger points produce better results. The following solution I have used with success:

Cocaine crystals	20 gr.
Antipyrine	20 gr.
Carbolic acid	10 drops.
Distilled water	1 oz.

Mix. It will keep indefinitely.

Rubber dam applied or napkins in place, fill hypodermic with solution; place point in the opening of pulp cavity gently against the pulp, then steadily but rapidly force the contents of the syringe against and up into the substance of the pulp.

The pain is only momentary, and in three minutes you can enlarge the opening into the pulp cavity. If pulp is still sensitive, repeat the dose. You can then remove the entire pulp without giving pain. In molars, each root has to be treated separately. The force used in injecting the remedy is an important factor in successfully performing the operation, and it should be directed in such a manner as to penetrate the root as far as possible. The anæsthetic effect is temporary, and if the pulp is not all removed at first sitting, sensation will return again in an intensified form. As soon as the pulp proper is removed, fill the hypodermic syringe with tincture of hamamelis, or better known as Pond's Extract, and force it into the pulp cavity, same as before. This will not only wash out the loose fragments, but it will control the hemorrhage. When satisfied the pulp is all removed, syringe same as above, then dry with absorbents first and complete with hot air. Use no medicants; fill roots usually with chloro-percha and gutta-percha cones. If convenient fill crowns at same sitting.

TREATING EROSION BY FILLING.

DR. C. E. KELLS, JR.

Dental Cosmos, December.

When there is only ordinary sensitiveness exhibited, gold, no doubt, is the most satisfactory, although porcelain inlays, when they can be used, may claim a share of the honor for first place.

But when the pulp has been somewhat encroached upon and

sensitiveness results, a metal filling is not indicated, for its good thermal conducting qualities would doubtless result in the death of the pulp, or at least great discomfort to the patient. Here, then, the oxychloride of zinc may be temporarily inserted, which will induce the recession of the pulp and its attendant protective measures. The consequent disappearance of the excessive hyperesthesia will occur to such an extent that later it may be replaced by gold.

If in the progress of the disease the pulp is very nearly exposed, the oxychloride would doubtless cause its death. This may be prevented by flowing over the dangerous spot a thin cream of the oxide powder mixed with pure wood creosote. The oxychloride may then be used to complete the operation without fear of severe results. When the time arrives to refill such cavities with gold, it is always advisable, when the depth will allow, that some of the cement be left in the bottom of the cavity, and the gold placed over it.

RETAINING RUBBER DAM.

Dr. Edmund Noyes says he greatly prefers the ligature with two beads tied around the tooth, slip the dam over tooth and beads and turn the edge of the dam under the gum.

OXIDE OF ZINC AND SHELLAC.

Ohio Journal Dental Science. March.

Dr. Burt incorporates oxide of zinc in thick shellac varnish, making a thick putty, which, he says, makes an excellent filling for roots or temporary filling. Moisture does not affect it.

RESTORING TEETH DECAYED THROUGH AT THE GUM MARGIN.

DR. H. H. JOHNSON.

Southern Dental Journal, December.

We often find devitalized teeth that have openings through the walls of the crown, below the neck of the tooth somewhere

near the union of the roots. When they stand for even a few days in this condition the peridental membrane takes on an hypertrophied growth, which soon fills a considerable portion of the cavity.

Clear out all decay and debris, and with a sharp instrument cut out the growth of gum tissue; there will be considerable hemorrhage; wipe out the cavity with carbolic acid, and pack tight with absorbent cotton; let it remain a day or two, when the cotton may be changed. Continue this treatment until the tissues about the opening have resumed a normal condition. Apply dam, if possible; dry out the root thoroughly, and wipe out with aromatic sulphuric acid; use plenty of it, as it is a good cleanser and hæmostatic; after again drying out, line the cavity with chloropercha; then take a thin piece of lead larger than the opening and burnish it over the cavity. The chloropercha will hold it in place; after it has hardened add another coat, after which apply well mixed cement, pressing down firmly and fill with amalgam or gold.

PROTECTION AGAINST CEMENT FILLINGS.

Items of Interest, June.

Dr. L. Matheson says always cover the floor of deep cavities with a film of mastic or carbolized resin, before filling them with cement.

TO PREVENT DISINTEGRATION OF CEMENT FILLINGS,

Dr. W. G. A. Bonwill covers the surface with heated paraffine.

COPPER AMALGAM, HOW TO USE.

DR. M. W. SPARROW.

Items of Interest.

If you wish a quick-setting copper amalgam, simply heat it enough to bring the mercury to the surface in very small beads, then cut it up in a mortar, and compress it into a lump in the hand. Never squeeze out the mercury through a chamios. Fillings treated

in this manner never turn black, but keep about the color of sterling amalgam, or perhaps a little darker, but never black. If you overheat a pellet add another to it, which has been heated just enough to permit breaking up. This will take up the surplus mercury of the other pellet, and form into about the desired consistency.

EXTRACTING AND REPLANTING FOR ABSCESS.

Dr. C. N. Pierce says he successfully treats obstinate alveolar abscesses by extracting the tooth, filling the root and replanting; the root is scraped, the socket is washed with zinc chloride, ten or fifteen grains to the ounce of water.

FILLING LARGE CAVITIES.

Items of Interest, December.

Dr. C. Welch fills large cavities in frail teeth by first filling nearly full with cement, which before setting is studded with pieces of Watts' crystal gold; after the cement hardens the filling is finished with gold united to the pieces set in the cement.

AMPUTATING ROOTS.

Where palatine or buccal roots are the sources of much annoyance and trouble from irremedial causes, it is recommended to amputate them. Dr. S. C. G. Watkins reports amputating one with a live pulp in it. He capped the stump with oxyphosphate.

TO REMOVE BROKEN DRILL OR POSTS.

DR. B. Q. STEVENS.

Dental Cosmos.

Succeeds well with the Walker-Younger engine trephine. The broken object enters the trephine, the narrow teeth of which cuts a groove around it.

IMMEDIATE REMOVAL OF THE PULP AFTER THE USE OF ARSENIC.

DR. C. N. JOHNSON.

Dental Review, June.

When time is not allowed for the after-treatment, he uses hot air, which enables him to remove the pulp whole and without pain.

VARNISH FOR PULPS.

Dental Review, June.

Copal picture varnish, which may be had of a dealer in artists' materials, will do to paint over an exposed pulp. Dammar varnish will answer the same purpose. Try the above. First dry the cavity, and paint with a bleached brush.

PROSTHETIC DENTISTRY.

BABBIT AND LEAD DIES.

Dental Advertiser.

Babbit-metal melts at a much lower temperature than lead, and if an attempt is made to pour lead—however chilled it might be before pouring—on a Babbit-metal die, the two will adhere. To overcome this annoyance, Dr. Chupein uses a Lewis Moulding Flask. The cone-shaped top is inverted and filled with sand; the thin plaster cast—having previously been thoroughly dried—is then laid on it, the ring put in place, and the lead poured in. When the lead is cold, the plaster model and sand are removed, the flask reversed, and the Babbit-metal poured into the lead counter through the cone-shaped orifice. In short, this method is reversing the usual way of making dies and counter-dies, and will save considerable trouble in overhanging models, where it becomes necessary to make cores in order to draw the model out of the sand.

TO PREVENT FRACTURES ALONG THE MEDIAN LINE IN VULCANITE PLATES.

DR. N. W. KINGSLEY.

Dental Cosmos, March.

If gum sections are used, grind up the set to the occlusion, and wax fast to the model. Pour plaster around the labial surfaces of the teeth and model, and when hard remove and keep as a guide for returning the teeth to position, as they are to be removed from the model. Next repeat the operation with plaster and sand, investing the two front blocks. Take all wax from inside of the arch, and remove the front blocks in the investment. Bend a piece of platinum and iridium wire so as to touch the pins of the blocks. With a fine pointed flame and fourteen-carat or eighteen-carat solder, fasten the platinum wire to the pins of the blocks, thus uniting

the two blocks. Let the solder remain rough if it flows so, as that will assist the attachment of the rubber. If plain teeth are used, proceed similarly, and unite six front teeth. The united teeth can now be placed in the plaster guide, and that fitted around the model will restore the teeth to proper position. A plate made in this way will not fracture, nor will the front joint open.

CORRUNDUM WHEEL WETTER.

DR. G. A. BOWMAN.

Archives of Dentistry, May.

A wheel-wetter for the laboratory may be made by taking a No. 20 copper or iron wire 12 inches long; bend in the middle to a hair-pin shape; imbed the points in a lead base. Take a wad of absorbent cotton and fix in the loop by pressing the wire together; dip the cotton in water; set the base on the lathe and adjust the cotton to the wheel; when the cotton becomes clogged, renew.

TO PREVENT PLASTER STICKING TO THE TEETH WHILE TAKING IMPRESSIONS.

DR. L. C. INGERSOLL

Recommends mixing thoroughly with an abundance of water and allowing to set until the affinity of the plaster is satisfied, or to mix pumice-stone one-half with the plaster.

Dr. T. B. Welch says the best thing is to oil the teeth.

RESETTING OLD TEETH ON NEW PLATE.

DR. WM. H. STEELE.

Items of Interest, April.

We often have patients whose teeth become loose and need resetting, but they do not like to have it done because they have become accustomed to the expression they give. The work can be easily done, and the same expression retained, as follows: Take

an impression and make a plaster-cast as usual; put the old plate on the cast, and fasten firmly with Fowler's sticky wax; next fasten the cast in the articulator, as is usual for a bite; after the plaster sets, take a sufficient quantity of modeling compound, soften thoroughly and fasten to the other half of the articulator; make the top surface smooth, and have it high enough so that when the articulator is closed the teeth will bed themselves full length in the compound. The compound should be softened in hot water, and the work done quickly, so that the teeth can be closed in without much force. When set, open the articulator carefully, drawing the teeth out of their places without breaking or displacing; remove the plate from the cast, take off the teeth, and arrange them in their order on a strip of wax. Now take the four incisors and place them in their respective places in the bite; close the articulator on them; with spatula and wax fasten them in their places to the base plate; when set, open the articulator and proceed as before, until the teeth are all mounted.

If the teeth need to be a little longer, (that is, show more in the mouth), after you get the bite, open the articulator with the set screw enough to give the extra length desired.

SMOOTH PLASTER MODEL.

DR. J. A. HOUSER.

Dr. Houser coats the impression with thin shellac, and then with collodion.

TEMPORARY PARTIAL PLATES.

DR. WM. H. STEELE.

Items of Interest, April.

We often have patients who want partials of several front teeth, and do not wish to go without. A nice way to do this work is to select the substitutes, get everything ready for the impression, extract the old teeth and roots, being very careful not to fracture the process. Now take the impression as soon as possible after

stopping the bleeding; pour the plaster cast; when hard enough, separate from the impression, and cut away from the cast the sockets of the teeth as far toward the palatine surface as indicated, and from one-fourth to three-eighths inches deep.

For the teeth select those with roots, such as are used for continuous gum work; break off the roots, leaving from one-fourth to three-eighths inch above the enamel line; round off all sharp edges, grind and fit the roots until each one will fit up into its natural socket easily. Now set them in their places on the trial plate, and try them in the mouth; when in position, if each tooth fits up into its socket just far enough so that the natural gum overlaps and hides the enamel line, they are all right, and will make a natural looking substitute. This kind of work should be inserted as quickly as possible after extraction.

DARK JOINTS—TO PREVENT.

DR. W. M. WADE.

Dental Cosmos, March.

Grind up the case in the usual way, and fasten the blocks slightly in their proper positions on the wax, then remove each block—except one of the centrals—and spread thin oxyphosphate cement on one of the ground edges, and replace it in position in close contact with the block already in place, repeating this until all the blocks have been replaced on the wax plate.

Dr. J. H. Downie's method is to take a few fibers of asbestos, twist them into a thread and pack between the joints.

BITE—TO TAKE.

DR. ARNOLD CLARK.

Dental Cosmos, January.

For a full upper case place the trial plate and wax rim in the mouth ready for the imprint of the inferior teeth, then place the tip of forefinger at the front of the wax rim about where the lower teeth will touch, and ask the patient to close his mouth slowly.

When the inferior teeth touch the finger make the request, "Don't bite my finger, but bite back of it." At once, if he has bitten forward, the jaw jumps back like a machine. As the teeth approach the wax, gradually manipulate out the finger.

ATTACHMENT FOR VULCANITE ON GOLD BASE.

DR. J. H. DOWNIE.

Dental Cosmos, March.

First, make the model, die and counter-die, and swage up the plate, the same as for any other attachment, using No. 28 or 30 gold plate, according to the case (Fig. 1). Take a piece of plate No. 32 and swage up another plate over the first one. Trim the

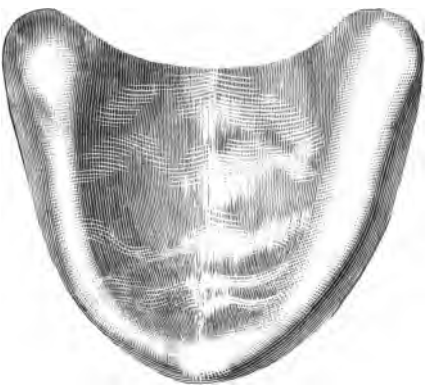

Fig. 1.

edges and set up the teeth in the wax on the plate. Trim the wax as desired inside. Mark the plate at the edge of the wax on the palatine side. Remove the teeth and the wax, and then cut out the palatine portion of the outer plate as marked. Put this over the other plate and strike them up together in the dies.

With a plate-punch make a row of holes all around within one-sixteenth of an inch of the edge of the sectional plate, which now extends over all that portion of the plate proper which is to be covered with rubber. After making a row all around the edge, the rest of the surface is perforated with holes punched promiscuously (Fig. 2.) If the punch is not large enough, the holes may readily

be drilled larger with the engine. Take a spear-pointed drill, larger than the holes, and countersink them on the under side.

If the piece has been sprung in handling and punching, it may again be struck up in the dies over the other piece. Solder the two

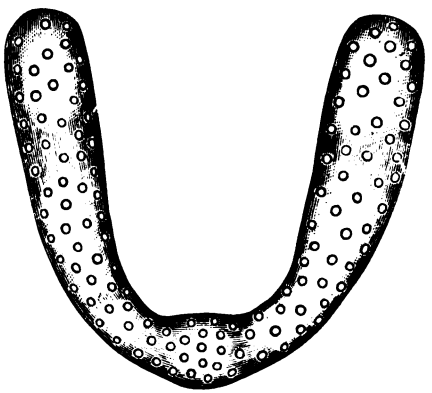

Fig. 2.

together, around the edge only. Always solder the inner edge; otherwise the outer edge will loosen while soldering the inner one. Never invest to solder.

Now put it in the dies and reswage, striking lightly, as, if too much force is used, the lead will enter the holes and spread out in the countersinks, thus preventing the plate being removed from the counter-die. Now the teeth may be set on, and the case flasked and finished in the ordinary manner.

MODELING WAX.

DR. DAVID.

Journal de Pharmacie.

Stearin	25 parts
Half-soft copal	25 "
Talc	50 "
Carmine	0.5 "

Oil of rose geranium, 2 drops to the ounce.

Melt the resin by the heat of a sand bath, and when slightly cooled add the stearin, stirring constantly. When this has melted

add the other ingredients, previously intimately mixed, and stir so that a homogeneous product may be obtained.

The adhesiveness of the composition may be increased or diminished by modification of the amount of copal. A more thorough blending of the color may be insured by dissolving the carmine in a little potash solution before mixing with the chalk.

TAKING IMPRESSION WITH MODELING COMPOUND.

DR. A. BURNE.

International Dental Journal, February.

Detach the handle from the tray and fix it in a slot made so that it can be easily withdrawn. Soften the composition, place it in the tray, smear the surface with vaseline, warm over a lamp and introduce into the mouth and carry up; withdraw the handle, have the patient to wash the mouth with cold water, replace the handle and remove the impression.

REFITTING RUBBER PLATES.

DR. E. H. RAFFENSPERGER.

Ohio Journal Dental Science, June.

Take a full upper denture—for instance, gum teeth. The plate has been worn a long time, and is so "loose" that the patient can hardly keep it in the mouth. The articulation being correct, take an impression of the jaw the usual way, run the cast as usual; dismiss the patient until the plate is finished—all you need is the impression. Take a fine saw and cut out all of the palatine portion of the plate; cut as near to the pins as possible; also file away the rubber rim above the gums, file clear down to the gum sections; this leaves the teeth all intact on a thin band of rubber in the shape of a horseshoe; this put on the cast; it will only go on one way, and that is the way it was worn in the mouth. Wax up as usual, and flask; in flasking, the plaster must only be run to the gum sections, so the teeth will all stay in the upper part of the

flask. The flask must be heated before it is opened. After it is opened the teeth will all be found in the upper part together with the old rubber. After picking out all the wax, boil the upper part of the flask for some time, take out and with a pair of pliers take hold of the rubber at the heel and pull it away—it will come in one piece, the teeth remaining imbedded in the plaster, leaving the teeth and pins nice and clean, and no odor. The piece is now packed as usual.

TEMPORARY PLATES.

DR. L. P. HASKELL.

Dr. Haskell prefers to take the impression as soon as the bleeding ceases and make the plate at once. He makes use of the sockets of the front teeth to insert for a short distance the necks of the artificial teeth in them.

TO CLEAN RUBBER PLATES.

DR. W. D. TICKNER.

Items of Interest, March.

Take of alcohol, ammonia and chloroform, equal parts. Pour a little of the liquid onto the plate, add pumice stone and quickly scour; then polish with oil and plaster in the usual way.

TO ACCURATELY ADAPT LOGAN CROWNS.

DR. W. C. WARDLAW.

Dental Headlight.

If time will permit, pack into the canal and over the end of the root gutta-percha, to remain a day for pressing away the gum; shape the root so as to require no further trimming; grind the crown to an approximate fit; place softened gutta-percha (or modeling compound) about the pin; press, with force, the crown into place; and, after a moment, carefully remove it. You have now

an accurate impression of the face of the root, with its peripheral line well defined.

Upon your glass slab build up a little cone of plaster-paris, and stick your impression into it; separate carefully, and you will still have your impression intact, and a plaster model of the root, giving the relation of the pin. With a corundum wheel grind away, both together, the gutta-percha and the crown to the peripheral line; remove the balance of the gutta-percha; deepen the pin hole; try crown upon model; grind to as close a joint as the eye will allow; paint model with coloring matter; try crown; grind away the colored point; repeat until a close joint is secured; make a final test with coloring matter upon the root. A second model will show more definitely where the nice grinding is to be done.

ALUMINUM WIRE GAUZE FOR RUBBER PLATES.

DR. D. V. BEACOCK.

Dominion Dental Journal, July.

The gauze is so very pliable that it can be easily worked over the model with the fingers, the rubber is vulcanized over it, the plate is strengthened and made more conductile.

TO PREVENT DARK JOINTS.

DR. L. H. HENLEY.

Items of Interest.

Fill them with gold before packing.

PLASTER IMPRESSION OF PENDULOUS GUM.

DR. H. R. NEEPER.

Archives of Dentistry, September.

Take impression as usual, with plaster a little thick. Press up hard and in such manner as to force loose gum outward as much as possible. Make model, and you will find the soft gum has made a

ridge on the model, projecting outward. Trim this off boldly until your model has the shape it would have if the loose gum were dissected away. The amount that can be trimmed off without harm is surprising.

CORRECT BITE.

DR. GOODFELLOW.

Dental Advertiser, October.

Tell the patient to open the mouth, and while open to place the tongue in the roof of the mouth and keep there while closing.

TIN MODELS.

DR. CHARLES RATHBUN.

Items of Interest, August.

Make an impression of the plaster model in sand; pour into it tin, which, after becoming chilled against the sand, is poured out, leaving a thin shell of tin exactly duplicating the plaster model; with a fine saw the rim is sawn in several places, to allow it to be bent down after the piece is vulcanized, for easy removal.

REPAIRING THE METALLIC PORTION OF COMBINATION WORK.

DR. N. H. KEYSER.

Items of Interest, August.

After adjusting the broken portion of the denture, flask the case as for vulcanizing, so doing it that the plate and teeth will be in the same section of the flask, leaving in the other a cast of the palatal portion of the plate. So arrange that the sections of flask will separate readily without straining any portion of the plate, and also to permit its removal and accurate replacement.

The plaster having become hard, the flask may be opened. Sometimes, to avoid accident, it may be necessary to first make the

flask and its contents sufficiently hot to slightly soften the rubber or celluloid attachment; it is better, however, in other cases to open it cold. After the flask is open, apply to the plate the blow-pipe flame, or by other means sufficient heat to release it from the attachment, and remove it. This should be done cautiously, so as not to destroy, any farther than necessary, the attachment; or, by using too great a force, bend the plate, injure the teeth, or the mold in the flask. We now have the plate free, and in the usual manner may make any desired repairs; bearing in mind, however, to provide for its accurate replacement in the flask. To add to its thickness, a corresponding portion of plaster must be taken from the mold in the flask, so that the plate will again occupy its original position.

The repairs to the metallic portion of the denture having been completed, it is adjusted to that section of the flask having the cast of its palatal surface.

We now proceed, without changing its position, to cut away all portions of the attachment injured by the heat used in removing the plate, farther removing sufficient to allow free space for the staples, pins, etc., on the plate, and to make such undercuts as may be necessary to securely unite the new to the old material. This having been done, we proceed to pack and vulcanize, making sure that the flask is entirely closed.

MAKING REGULATING PLATES, APPLIANCES AND SMALL PARTIAL PLATES WITHOUT WAXING UP OR FLASKING.

DR. F. H. LEE.

Dental Cosmos, July.

The model is first dried, then painted with a solution of rubber in chloroform. The rubber is then pasted or rubbed on with a hot spatula, as in the process of "waxing up." If teeth are used, they are to be warmed and pressed in place and held until cold. The work is then invested in plaster with or without a flask. If without a flask, the vulcanizer and plaster must be allowed to cool before opening.

SOFT AND HARD RUBBER COMBINED FOR UNDER-CUT CASES,

MR. COLYER.

Dental Record, May.

Recommends where the ridge is much under-cut that soft red rubber be used to fill it, vulcanizing it to the hard rubber. When the plate is inserted the soft rubber will give, allowing the plate to pass up, then spring back into position filling the undercut and holding the plate firm.

QUICK SOLDERING OF SMALL PIECES.

DR. H. H. KEITH.

Dental Review, June.

Make a small box of Russian sheet iron, fill it with common sand; the pieces to be soldered are placed in the sand with only the part to be soldered exposed, thus avoiding investing and drying.

TO FIT FLAT MOUTHS.

DR. W. B. WINDER.

Items of Interest, September.

Examine the mouth by touch and scrape the impression in accordance with the hard places.

METAL CASTS FOR VULCANITE AND CELLULOID.

DR. WM. H. STEELE.

Items of Interest, June.

To make these casts, it is necessary to have two impressions; the first taken with wax; oil, and pour with Teague's Impression Compound. Next take an impression of the mouth with Teague's Compound; mix it quite thin, and be careful to get a perfect im-

pression. The cup used for taking the second impression should have the bottom perforated all over, the holes being about one-eighth inch in diameter; also, a row of holes the same size, extending entirely around the rim, and about one-fourth inch from the top. Before filling the cup, cut a piece of cheese cloth to fit it; wet the cloth, and place it in the bottom of the cup. Should you wish an air chamber in the plate, examine the mouth carefully, and find where the suction will do the most good; then, with a pencil, outline it on the impression taken last; with the engine and a No. 5 round bur follow around the outline and pit, making the pits one-sixteenth inch apart; complete the vacuum by going over and pitting the whole enclosed surface. Good adhesion can be got for lower plates by beginning on the impression, about one-fourth inch from where the heel of the finished plate will reach, and run a line of pits entirely around the impression, in its deepest parts, to within one-fourth inch of the opposite heel; use a smaller bur than for the upper impression. The model obtained from the wax impression is to be used as a core for the metal cast. When sufficiently hard, separate the core from the impression, trim as desired, cut one shallow groove on each side, midway between the centre of the arch and the alveolar ridge; these grooves are to be used as pouring-gates. Place the core in the impression, letting it rest on the pin-heads, and fasten with soft binding wire (such as is used by jewelers); dry the impression and core over a stove till perfectly dry. Melt pure block tin and pour it slowly into the mold while still hot; when cool remove from the impression, and with cutting-pliers cut off the pins close to the cast. This gives a smooth cast that is unchangeable under all conditions, never breaks, and the hollow cast is the same thickness in all parts. It can be easily separated from the vulcanized plate, by knocking out the core and pinching the two sides together.

EMERY BALLS FOR THE LATHE.

DR. D. V. BEACOCK.

Dominion Dental Journal, July.

Get three or four pieces of hard wood turned to fit your lathes; have one round like a marble, the others cone-shaped, size

to suit yourself; give them a thin coat of Spaulding's glue; sprinkle emery all over them while wet; lay by till thoroughly dry. These, made with different grades ot emery and used dry, last a long time, and are easily renewed; they cut a plate down rapidly, and are much safer than burs.

HOLDER FOR LIP AND CHEEK WHILE TAKING IMPRESSIONS.

DR. T. D. INGERSOLL.

Items of Interest, May.

Use, where the cheeks fall in and to hold out the lower lip, a bow of wire.

AID TO CASTING.

DR. A. W. FREEMAN.

Dental Review, April.

If a model is difficult to remove from the sand on account of undercuts, cover it with heavy tin foil; the foil will be left in the sand thereby holding it in place.

SPRINGS FOR RETAINING DENTURES OR ARTIFICIAL PALATE.

DR. W. H. JACKSON.

Ohio Journal Dental Science, March.

Procure gold spring wire No. 16—English piano wire size—about 18 wire gauge, bend it so as to fit around the palatal curve of the second molar, then at right angles up between the first and second molars, over the notch between them to the gums, curving along the buccal surface of the first molar to the anterior angle, then toward the crown of the teeth, passing over the masticating surface in the notch between first molar and the second bicuspid, back to the plate curving forward around the palatal neck of the second bicuspid to

furnish a good strength in soldering. This avoids all injury of tooth substance. The force of the spring is applied on the buccal surface where it is easily cleaned. The hold on most teeth is excellent and is easy to get at to remove, and of such a shape as to hold the least food about it.

It is necessary to have the plate come in contact with the tooth on the palatal surface or the spring will move the tooth from its proper position. This spring can be used as a retainer of almost any appliance in the mouth.

DARK JOINTS, TO PREVENT.

Dental Cosmos, July.

Dr. Otto Arnold says before packing, lay strips of white rubber behind each joint.

Dr. D. W. Barker, Cosmos, September, suggests the use of pink rubber instead of white.

BITE—MODELING COMPOUND FOR.

DR. W. BUZZELL.

Ohio Journal. May.

Dr. Buzzell recommends modeling compound as the best material for plates on which to get a bite. He builds the rims of wax.

MENDING RUBBER PLATES.

DR. H. R. NEEPER.

Archives of Dentistry, September.

Suppose an upper plate to be broken through the median line, being, as it were, halved. Fasten the pieces together as accurately as possible with shellac, plumbers' wax, or other suitable material. Fill the palatal surface with plaster; when hard, trim plaster to edges of plate, remove the shellac, immerse in water a moment and remove the halves from what is now the model. Remove the block

from each side the break, or the block from over the break; or, if plain teeth, one from each side the line of fracture. File the broken surface away on each half, making a long bevel toward the center. Cut away with file more than enough to let the blocks to place. Replace the halves on the model, and enough should have been cut away to leave a space between the halves not less than one line in width. At this stage, for the first attempt, the case should be flasked and plaster built up on the sides so the halves cannot be displaced, although not absolutely necessary. Take a hot burnisher and pack small pieces of rubber on the freshly filed surfaces of the plate, and, if the burnisher is hot enough, it will stick. Put teeth on plate and fasten first pieces of rubber as above. Pack around pins with warm burnisher, and fill between the halves the same way. Fill flask with plaster and vulcanize. Do not be afraid you have not enough rubber in, as it increases in bulk when vulcanizing.

Try the above principle in repair work, and you will never "wax up" another repair case.

IMPRESSION MATERIAL.

DR. W. N. MURPHY.

From which a die may be cast direct: Plaster, 1 qt.; marble dust, 1 pt.; chalk, 1 pt. Mix and use as plaster.

THE PARKER FURNACE FOR MELTING METALS, MAKING SOLDERS, MENDING BROKEN SECTIONS OF TEETH, REPLACING PINS, ETC.

DR. F. E. TWICHELL.

Dental Review, October.

For the melting of metals for solders, plates, alloys, etc., it does the work quickly. A button of gold weighing 40 dwt. with 3 dwt. of platinum is easily and quickly melted. It is used for the heating of investment, for soldering, bridge work, crown work,

partial gold plates, etc. It distributes the heat evenly, and if the heat is kept up long enough will flow the solder, though this is better done with the blow-pipe.

To mend a broken gum section, hold the pieces together with a little sticky wax until they can be invested, using plaster and asbestos (half and half); when dry remove the investment, cleaning with a little chloroform, then mix a little of the body, which is sold with this furnace, with water to the consistency of putty, put a little of this between the pieces and press the piece on investment, cover break on outside with a little gum enamel, place in the furnace and fuse.

When a pin is broken or becomes loosened in the tooth, cut off pin close and drill out the platinum and enlarge the hole, using a sharp, hard-tempered drill moistened with kerosene or spirit of turpentine and camphor, equal parts; do not use a steady pressure with a rapidly revolving drill, gently tapping where you wish to drill; a hole can be easily enlarged. Put a pin obtained from an old tooth, pack a little body around it and fuse.

QUICKLY MADE TEMPORARY PLATES.

DR. B. H. CATCHING.

Dental Cosmos, December.

Suppose a case where a root is being treated preparatory to crowning, and the patient does not wish to go without a tooth until the operation is completed. Take an impression, make a model, form on it a plate of Head's ideal base-plate, build up the material for the backing, select a rubber tooth, heat and press it in place. The plate may be readily formed by softening in hot water. Use dry heat for building up the backing and for attaching the tooth.

STRENGTHENING RUBBER PLATES.

Dental Mirror, March.

After the flask is separated, cut a piece of rolled gold wire, No. 60, to reach the bicuspids on either side, indent slightly with plate shears and bend so it will lay on top of pins of the anterior teeth, then soft-solder the wire to the camins if single teeth are

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used, or to the bicuspid blocks if gum teeth, also to the central incisor pins if thought necessary. The wire can be used in any place where there is a weak point; for instance, when there is but one tooth a piece of the wire should be bent to fit closely to the model, and soldered to the pins of the teeth. Anneal the wire and brighten it with powdered pumice-stone before using.

WHITING FOR FLASKS.

DR. A. W. BUCKLAND.

Paint the inside of flasks with a solution of whiting, which allows the plaster to be easily removed and protects the flask from rust.

PLATINIZED SILVER.

DR. L. P. HASKELL.

Make it of silver four parts, platina one part. It works easy in swaging and can be soldered with eighteen karat gold solder.

PRACTICAL SUGGESTIONS ABOUT PLASTER OF PARIS.

BY DR. RODRIGUES OTTOLENGUI.

Dental Mirror, March.

Plaster will set more rapidly if tepid (not hot) water is used, than if we take cold. A clean smooth cup is the most convenient vehicle in which to mix plaster, rubber bowls being especially unsatisfactory to one who has become accustomed to the thin cups. New cups should be obtained as often as the surfaces become checked so that the plaster is difficult to remove. If an excess of material has been used, scrape it out into the waste-box, and what little there is left in the cup will easily come away when hard, by filling the cup with water.

To mix plaster, put in the cup at the outset about as much water as judgment indicates will be needed. To add water later is a mistake. Drop in the plaster a little at a time, allowing it to disappear below the surface before adding any more; repeat this till

the plaster protrudes above the water, which refuses to take up any more. Then stir vigorously with a smooth clean knife, and a mixture moderately stiff and perfectly smooth will reward you. The more it is stirred the more quickly it will set, and the stiffer it gets. Use it for the purpose in hand when it has reached the required consistency. If on mixing it is found that a miscalculation has been made, as the mass is thin, do not add more plaster; such a step will ruin everything. Pour off any excess of water, and then stir till stiffening begins. Mix enough plaster at the outset, because to mix a second batch, especially in flasking, gives a mass one part of which will set sooner than the other, which is often very undesirable. In taking an impression of a large surface, this sometimes becomes necessary. Then mix the first batch quite thin and flow it over the entire surface of the object of which a duplicate is desired. Then add other plaster until the impression is as thick as needed. By the time the last lot has set the first will usually be hard, and all will be well.

In mixing for impressions of the mouth, use fine plaster; add a little salt and a little powdered pigment; Venetian red or Spanish brown serve admirably. This will produce a quick setting tinted impression material, which can be readily detected from the model which is to be poured into it. The plaster must be mixed as described, care being taken not to have it too thick. Do not stir until in the presence of the patient.

Then stir until it can be felt that the mass has begun to stiffen. Fill the cup rapidly, carry it to place firmly and hold it there motionless. If there is a high roof put some plaster in the vault with the knife. If it is feared that the buccal portions of the molar teeth may not be reached, place plaster there also, before inserting the tray. As soon as the plaster begins to set in the cup, chop it up so that it may be more readily removed when the cup is to be cleaned. As soon as the material in the cup will fracture sharply, remove the impression regardless of possible fracturing. If this does occur, collect all the pieces from the mouth; they may be replaced so as to form a practically perfect model. I have made up an impression from thirty odd pieces and secured good adaptation.

To procure a lower impression, put but little plaster in the tray, place plaster around the teeth in the mouth with the knife, being

sure to cover all surfaces of the teeth; then quickly insert the tray and let the mass harden, and remove as before. In very difficult cases, where the teeth are long and perhaps loose, dispense with the tray altogether. When the material is sufficiently set, split it into sections with a sharp pen-knife, and afterwards join the fractured pieces together as before.

To pour a model, use a shaving brush, and with soap-lather thoroughly soap the surface of the impression, especially in the pits for the teeth, and be careful to wash all the suds off afterward; otherwise the surface of the model will be pitted. Mix the plaster moderately thin. Have the surface of the impression saturated, and a little water in the pits for the teeth. Start the plaster into the last molar and let it fill up and run over into the other pits, forcing out the water ahead of it until all are filled. Then turn the impression over and shake the plaster out of the impression back into the cup. This insures a thin film of plaster over the entire surface. If the process is now repeated and the impression slowly built up without turning it over, the result will be a most accurate model.

Where the model is to be used for gold work, and dies must be made, if there are any teeth present, a pin should be placed in each. In doing this cut the heads off, and later the plaster teeth may all be broken off, the pins withdrawn, the dies made, and the teeth readily returned to position, where they may be again fastened by using a camel's-hair brush and plaster very thin. In repairing models in this way, take a saucer with a little water and drop in a little plaster, but do not stir it. The plaster may be taken up with the brush placed along the joint between tooth and model, and as it soaks in the excess must be wiped away with the brush filled with water.

When it becomes desirable to trim a model, after it has lain around a day or two, and so become quite hard, dip it in water for a few minutes, and it may be readily cut with a sharp pen-knife. If an impression is filled and allowed to stand over night, drop it into hot water, and the steam generated will make separation more easy. Models should always be well soaked before more plaster is added to them. If, however, it is desired to preserve a model, upon which a plate is to be vulcanized, it may be readily done by soaping it slightly and flasking it as dry as possible. With care,

after vulcanization, the investment may be removed without injury to the model, which, if then allowed to dry, may be separated from the plate.

To mix plaster and sand for investment of gold pieces, drop sand into water, and without stirring pour off as much water as will run out. If now half the quantity of plaster be added, vigorous stirring will produce a mass of the proper consistency. At first it will appear stiff, but by stirring the sand will soon yield enough water to saturate the plaster, when the whole will become incorporated.

Never varnish plaster under any circumstances, except for molding in sand.

SETTING TEETH.

DR. PELTON

Says the teeth from the cutting edge to the base of the teeth should be directly towards the top of the alveolar ridge.

TO MEND PLASTER CASTS.

DR. GORDON WHITE

Says phosphate cements are superior to anything else for this purpose.

TAKING DIFFICULT PARTIAL IMPRESSIONS.

DR. G. E. ANDREWS.

Dental Review, October.

In taking impressions for partial plates, where the teeth are long and irregular, fill the spaces between the teeth with plaster, allowing it to harden; varnish and then take impression over all; after removing impression, take out the "cores" and place them in position—in impression.

Oil should not be used on impressions or bites, as it softens the plaster coming in contact with it, and its uneven flow prevents obtaining a correct model; collodion, sandarac varnish or soap are

better, but use a thin shellac varnish, paint the impression and soak in water a few minutes and then run cast; as soon as it hardens, remove impression; result—a hard, smooth model.

A GOLD CLASP, PERFECT IN FIT, EASILY MADE, AND NOT WEARING TO THE TOOTH CLASPED.

DR. W. C. WARDLAW.

Dental Headlight, July.

Take spring clasp-metal of proper width; bend into a hoop large enough to surround two-thirds of the tooth without touching it; attach to plate; drill three holes at carefully selected points; insert set-screws; spring over the tooth; tighten up your screws, and you will have a clasp, strong, tight, stable, which will closely fit an ill shaped tooth without its having to be cut.

OIL FOR MOLDING SAND.

DR. L. P. HASKELL.

Ohio Journal Dental Science, September.

Dr. Haskell uses olive oil mixing to the same consistency as if water were used.

TO ATTACH RUBBER TO GOLD.

DR. FRANK ABBOTT

Items of Interest, August.

Says solder platinum loops to the plate. Dr. A. H. Lee says with an engraving tool, roughen the surface of the plate.

EXPANSION OF PLASTER.

DR. B. MACLEOD

Says the expansion of plaster can be overcome by the use of potash alum. Put three or four ounces of the alum in one gallon of water and use it for mixing with the plaster.

CROWN AND BRIDGE WORK.

CASE GOLD CROWNS.

DR. CALVIN S. CASE.

Dental Review, February.

Let us suppose that we have made a pure gold band and pressed it to its proper position on a lower molar root. Its height should be nowhere more than one-sixteenth of an inch from occluding teeth.

Now, by the use of a steel die-plate in which intaglio cusps of teeth have been sunk, cusps of pure or 22k gold can be struck and finished in less time than it takes to describe the method.

Have the gold for this purpose rolled about one-sixteenth of an inch thick, from which cut a piece a little smaller in diameter than the selected intaglio. Strike into place with a smooth-faced hammer and file off surplus even with the face of plate. A slight experience will enable one to start with a piece that will evenly fill the depression with little surplus.

If it is desirable to make the cusps thicker, start with a larger piece of gold and file off overlapping edges. If you wish the cusps smaller or thinner than the selected intaglio, first swage a shell brass or German silver, to be used as a matrix, of sufficient thickness to produce the proper abridgment.

Some prefer to use thin gold plate, swaged to place with small pieces of lead or bullets, and filled with a lower grade of gold. For this purpose use gold plate alloyed one-fiftieth with platinum and fill with gold as near the color of band as possible, in case it is necessary to cut much from borders or cusps.

Lay the cusps thus made upon the band and bring occluding teeth to position. If much cutting of the ferrule is necessary to perfect articulation, it should be filled with plaster-of-paris or other filling to prevent bending in the process of grinding down. Finally perfect joint on the outside of the mouth, unite the parts and finish.

Another resort for fitting the cusps to the band and one that will afford an opportunity for great precision is as follows: Take bite and a plaster impression of the immediate section, with band in position. When this is filled it should give perfect antagonizing models, with band in exactly the same relative position it occupied in the mouth.

To avoid the possibility of an error in readjusting the band to the plaster impression when it is not drawn from the root, take the impression in sections—using two pieces of thick sheet lead about as large as a silver dollar cut in halves, for impression trays. Fill the band with modeling compound and make the sections part from it in such manner that it may be perfectly adjusted to place before filling.

If the ends of the band have been joined with squared edges and soldered with 22k gold, reduced with equal parts of silver and copper, the cusps may be united to band with a 22k solder which has been reduced with an alloy composed of silver 1, zinc 2 and copper 3, and in a manner that joints cannot be detected when finished.

Before the ferrule is pressed to place preparatory to fitting and joining the cusps it should be contoured with suitable pliers and its upper border drawn in so as to present, when finished, a proper artistic appearance.

PORCELAIN TOOTH—CROWN WITH GUM.

DR. W. M. SHARP.

Dental Cosmos, January.

Fit a platinum collar and cap to the root-end and perforate the cap to allow a platinum post to be pushed through into the root and project a little from the cap. Select a pinless, plate, rubber, or other porcelain crown; fit, articulate, and wax it to the cap and post, and remove for vertical investment in just enough plaster and marble-dust or asbestos to hold the parts together. When set, remove the wax and fill with porcelain body, dry thoroughly, and biscuit about three minutes in a Parker-Stoddard furnace. So soon as cool enough to handle, carefully cut the investment away from

the crown and the cap, add body to fill the cracks, and fuse in the furnace. If the gum has receded from about the neck of the root, gum-enamel can be modeled over the collar, and the final firing (with but one investment) will produce a very artistic restoration of both crown and gum, to be mounted with cement as usual.

MICA MATRIX FOR SOLDER BUILDING.

DR. R. WALTER STARR.

Dental Cosmos, January.

When it is desirable to thicken or build the backing of a single crown, a ribbon of mica is bent round it, made fast with hard wax, and invested as shown in cut. A ribbon of mica may also be

wrapped around the collar of a cap-crown and be secured by twisted binding-wire; pieces of gold plate or solder can then be melted on the cap in the matrix, to be subsequently carved into cusps of any desired thickness.

SOLDERING BACKINGS.

Dental Cosmos, January.

To prevent the soldering of backings together, Dr. R. Walter Starr interposes in the investment little strips of mica.

STOWELL CROWN.

DR. S. S. STOWELL.

Dental Cosmos, February.

The root is prepared slightly countersunk, an old-fashioned wood pivot tooth is selected, the hole in which is slightly enlarged

and deepened. The canal is drilled and tapped to fit a How platinum-iridium screw post. A groove is cut all around the root with a small bur, the post is set, (screwed in); the groove is filled with copper amalgam, allowing an excess, which by pressing the crown in place will cover the end of the root. Fill the crown with cement and press it home, holding there until the cement sets.

Bicuspids are treated in the same way, only two pins are used to accommodate a crown with two holes.

SOLDER FOR CROWNS.

DR. A. E. MATTESON.

Dental Review, January.

For soldering bands: pure gold 1 pwt., cadmium 1 gr. For soldering cusps to band: pure gold 1 pwt., cadmium 2 gr.

The gold should be brought to a fused state on a piece of charcoal or in a crucible, and the cadmium suddenly thrust into it one grain at a time. It fuses and flows readily and with no perceptible difference in color.

GOLD CROWN.

DR. W. T. MAGILL.

Dental Review, June.

Where the natural teeth are much worn and pulps still healthy and it is desired to lengthen the bite, fit the band and contour it, file to the length desired, place on the root, and within the band place a disc of writing paper over the root within the band covering the end of the root, fill the band out with softened Gilbert's stopping and direct the patient to close the teeth; this gives the length and also the form of occluding teeth and guide to form cusps, if needed; remove band and invest in plaster and marble dust, leaving only the end containing stopping visible; when thoroughly dry remove the stopping and press on the end of band a piece of tissue paper; this gives a pattern; cut to mark, and paste on to a thin pure gold or platina plate cut to the paper and it will fit within

the band forming a cup which is now ready to be fitted with gold of a lower carat, coin will do, cut into small pieces and dropping them in with tweezers held in the left hand, holding the blowpipe in the right, and you have a crown that will not return to you in two or three years with the grinding surface worn through, a crown that will sustain as an abutment any bridge piece that may be desired to attach to it.

SETTING CROWNS WITH HILL'S STOPPING.

DR. B. OSCAR DOYLE.

Dental Review, January.

The root, after being thoroughly prepared, is made dry and coated with a chloroform solution of the stopping; the crown having a small hole in it for escape of the surplus, is warmed with a sufficiency of the chloro solution in it, of the proper consistency, and pressed in place with the fingers.

BRIDGE-WORK, REPAIRING.

DR. W. W. WILLIAMSON.

Dental Cosmos, April.

Remove the debris from the place of fracture. Grind a porcelain facing to fit. Back the tooth with gold or platinum to suit the required shade. Have the pins well flattened and pressed down on the backing. Bore a hole through the gold in the bridge-piece where it is most desirable to have the post placed. Make the opening of such dimensions that ordinary-sized iridio-platinum wire will fit snugly. Square the hole with a fissure-bur to conform with the shape of the wire. Adjust the tooth in proper position. With a small-pointed instrument mark on the backing of the tooth through the hole in the denture the place where the opening meets the facing. Remove the tooth and solder the end of the post on the backing where marked. Have the post of sufficient length to protrude about one-eighth or one-sixteenth of an inch on the lingual aspect. Cause the solder to flow thoroughly over the parts, being

careful to avoid covering the pin except at the attached end. Remove any excess of solder, making the same smooth and symmetrical. Grind from the labial aspect sufficient to allow for extra thickness of gold on the backing. With a thin steel ribbon-saw divide the end of the post, sawing a little below the point of emergence. Countersink the lingual side of the denture to conform to each half of the split post. To attach the tooth use cement, and before it sets bend the two halves of the post steadily and firmly into the grooves prepared for them. Use long-nosed pliers or forceps to press the ends of the post in place, resting one beak against the front side of the facing, the same being protected with a cushion of spunk or bibulous paper. Fill any remaining depressions on the lingual side with gold foil, making anchorage pits if necessary. If the details of the work have been faithfully adhered to, it will be found that the repair, instead of, as heretofore, being the weakest point, will be as strong as the denture itself.

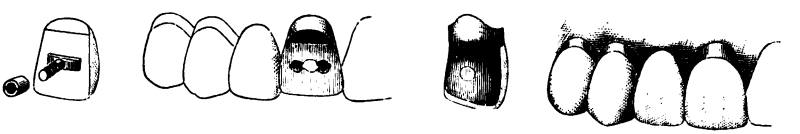
REPAIRING BRIDGE WITHOUT REMOVING FROM THE MOUTH.

DR. E. B. WHITE.

Dental Cosmos, April.

A method that makes a perfectly strong attachment, and one that can be very readily applied to any of the six anterior teeth and with but little more work to posterior teeth, is to solder a piece of round platinum-pin material between pins on facing, (Fig. 1), allowing it to just reach through to the inner surface of bridge, and upon

Fig. 1. Fig. 2. Fig. 3. Fig. 4.



it cut a fine thread nearly its whole length. The pins in facing should be shortened to about a line in length, and corresponding depressions made in the labial surface of crown for the insertion of pins to prevent rotation. Drill a hole in bridge (Fig. 2) of just

sufficient size to insert pin, enlarge it from palatal or lingual side about a line in depth and about one size larger in diameter than the pin; make a nut to fit the enlarged portion of hole, and cut thread through the center to fit pin on porcelain (Fig. 1). The facing is adjusted by screwing the nut firmly to place, and will be perfectly solid and not liable to loosen as when riveted. Figs. 3 and 4 show the complete repair.

TWO BICUSPIDS ATTACHED TO ONE ROOT.

DR. R. WALTER STARR.

Dental Cosmos, April.

The tooth was shaped with safe-sided diamond disks and corundum points. The measure of the root was taken by twisting wire around it, which, on being removed, cut open, and straightened out, gave the size for the gold band. The strip for the band should be cut the thickness of the metal shorter than the wire, and the ends soldered, placing the seam on the inner side. The cusps were struck up and filled a little more than flush with eighteen-carat solder, the ferrule filed flat to fit the cusps, and both wired together. A quantity of flux was placed at the joint, and the whole fused together with the solder in the cusps. This cap was placed on the root and an impression taken by placing composition-material between the teeth and having the patient bite into it. Plaster was run into this, and when hardened it was broken at the ends, thus forming the articulation. A suitable plate-tooth was backed with platinum, ground to fit, and united to the cap.

LOWER CENTRAL INCISOR BRIDGE.

DR. E. B. WHITE.

Dental Cosmos, April.

Half caps are fitted to each of the laterals, allowing the cap to extend over the lingual to the labial side of the cutting-edge of the tooth, which is beveled down from within outward at about an angle of fifty-two degrees for the purpose of locking the crown

and to prevent it being pushed downward. After fitting the caps and placing them in position, an impression is taken for making a model on which to locate the dummies for soldering, by placing soft plaster in the space to be filled and allowing it to extend above the cutting-edge of the teeth, and having the patient bite into it while soft. By this means the impression and articulation are taken at once. After pouring the model, the teeth are to be fitted to place and backed, and the whole piece invested (in plaster two parts, marble dust one part) and soldered. The attachment by means of half caps makes a strong and durable piece and avoids the devitalization of the teeth for pin-crowns, also the unsightliness of gold that would occur were the teeth full capped.

TO SOLDER BACKINGS WITHOUT CRACKING THE TOOTH.

DR. R. MATTHEWS.

Western Dental Journal, August.

Make a little iron disk, shaped like a saucer; lay the teeth in it face down; set around it a ring like a napkin ring; blow the flame under this iron saucer and against the ring until the tooth becomes red. Then direct the flame onto the backing and solder without danger of breaking.

MOUNTING BICUSPID AND MOLAR DUMMIES FOR BRIDGE WORK.

DR. W. T. STARK.

Western Dental Journal, June.

A porcelain molar or bicuspid is selected and ground to place. It is then backed with gold plate cut in shape of a cross, so as to have flanges extending from each side; the central portion is soldered to the pins, after which the flanges are brought together, burnished closely against the surfaces of the tooth and soldered, thus enclosing the porcelain entirely in a box or shell of gold, and making the support independent of the pins. It is then ready to

be tipped, adjusted and soldered to place. By this method much of the immense waste of solder incident to attaching hollow gold shells is obviated, and much time and labor saved in construction, while its capabilities for resistance in mastication are equal, if not superior, to the gold shell. If it is desired to make an open face porcelain, proceed in same manner, afterward cutting the gold away from front surface and burnishing the edges down closely.

A NOVEL DENTURE.

DR. A. E. MATTESON.

Dental Cosmos, August.

By referring to the cut you will observe an excessive protrusion of the inferior jaw, a lack of development of the superior, loss of the four incisors, right cuspid, left second bicuspid, and

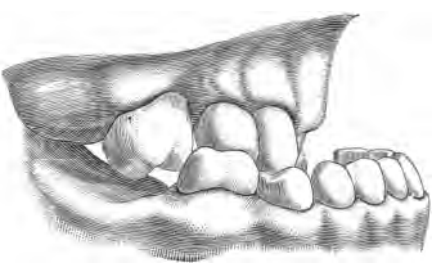


Fig 1.

first molar. You will also observe that the outer cusps of the cuspid and bicuspid occlude inside the outer cusps of the lower bicuspids; also that the superior cuspid articulates on a line with the inferior second bicuspid.

Upon looking into the mouth on a line with the articulating surfaces of the lower teeth, when the jaws are closed, the upper teeth show but about one-half their length, while the lower central incisors are fully one-half an inch anterior to the gum of the upper jaw, where the incisors are missing. (Fig. 1).

The management of the case was as follows: A plate was made covering the ends of the remaining four superior anterior teeth, which demonstrated that the appearance of the face would be greatly improved by lengthening the bite. It was adjusted by

cutting away until found to be comfortable. These teeth were then built up with hard wax to that distance and carved in contour. The cuspid was covered in front as well as lengthened until the end articulated with the inferior teeth. Impressions of these were taken in plaster and filled with "Melotte metal," the same also with the right molar. For the latter a crown of gold and platinum plate was made which covered it entirely, its shape being favorable.

Patterns for the shells of the bicuspids on the right side and cuspid and bicuspid on the left were made of No. 60 tin foil by burnishing over the metal dies, cutting out the faces of the bicuspids, but covering the cuspid where the tooth had been covered with wax. These caps were made of one piece by slipping it between the teeth and forming it around like the letter S, with its ends soldered. (Fig. 2). As some spring to the shell was required,

FIG. 2.

FIG. 3.

coin gold No. 27 was selected as the best material. These were made, adjusted, and articulated, and an impression taken with them in the mouth. They were then removed and invested in plaster and sand. A "Bing" tooth was adjusted and soldered to the shells between molar and bicuspid. (Fig. 3).

By closely inspecting the cut you will notice that these side-teeth are twisted, and stand in such positions that a cap could not be passed over the ends; but by passing the shell sideways, allowing the teeth to pass through the opening, it could then be placed in position.

On each lingual side of the shells, near to and parallel with the gum, two wires (iridiumized platinum), No. 14, were fitted and soldered. These wires extended a quarter of an inch beyond the shells, forming horns. (Figs. 2 and 3). Over these horns platinum tubes were fitted, and an impression taken with the fixture in position, the tubes in place, but only including the front of the teeth and the gum under the lip, and only on a line of the gum ridge and parallel with the horns, thus permitting the remo[illegible] rear of the

impression by drawing it outward, and the removal of the tubes from the horns with the impression. The fixtures were again removed and the impression just taken replaced on the fixtures,

FIG. 4.

and a cast of the fixtures and impression was made, the bite having been previously obtained.

Teeth were ground and arranged, making a square bite. The

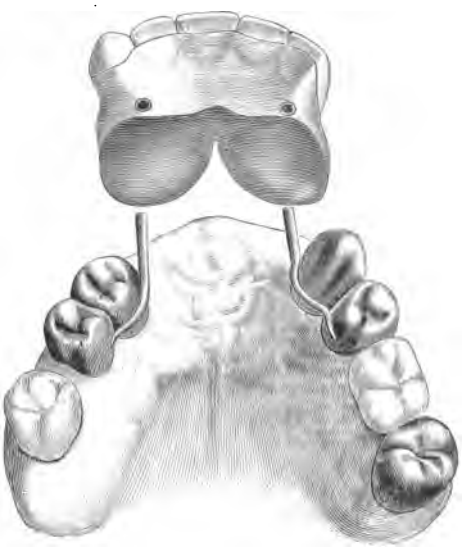


Fig. 5.

ends of the tubes were passed between the artificial cuspid and lateral on the right side, and the lateral and central on the left side. The end of each tube was conformed to the outline, and the open-

ing closed with pure gold, presenting the appearance of an approximal gold filling. (Fig. 4).

To preserve the parallel position of the two tubes the rubber plate was vulcanized with the fixtures, the horns holding them in that position. After vulcanizing, the plate was separated from the fixtures and finished. The fixtures were cemented on the teeth with gutta-percha.

The novelty of the attachment of this removable bridge consists in its bearings (the piers or bearings being the two parallel bars or horns), the insertion and removal being at right angles with the line of axis of the teeth instead of parallel, and the application of the fixed crowns, without grinding or in any way changing the shape of the natural teeth. (Fig. 5).

SETTING LOGAN CROWNS WITH GUTTA-PERCHA.

DR. W. E. BAXTER.

Dental Review, April.

Barb the pin, warm it and pack gutta-percha around it to conform to the size of the root canal, warm again and press into place, remove and trim away the surplus gutta-percha, warm and press home. Be careful to apply the heat to the porcelain and let it be conducted to the pin to prevent cracking.

TELESCOPE GOLD CROWNS.

DR. APPLEBY KING.

British Journal Dental Science, September.

Take a piece of small wire and with pliers twist it round the stump to operated upon, slip it carefully off and paint it black; take a p[illegible] of some hard wood, something like a riveting hamm[illegible] the stick according to the size of the band yo[illegible] while the paint is wet on your shaped wi[illegible]ring, [illegible]hape of the stump, place it on the top of the stick [illegible]n blow with the flat end of a

good-sized hammer, take away the wire, shape the piece of wood carefully and accurately as the dark mark guides you, until the whole of the dark line disappears—mind you are inside the line, but do not go too far; make a ferrel of coin gold for the top of the stick, polish and finish on the stick, take it off and try on the stump; if you find it a little too small to go on, take a sand-paper disc and with the engine rough it all round and make it fit on "slick;" this being done, place the ferrel again on the stick and make another ferrel to fit over it, as you would proceed to make a lid to a box. Now you have a telescope joint; take off the second collar and fix on the stump with osteophosphate; having arranged the gold crown to the articulation with strong wax, remove it and solder the second collar on the crown and polish, fill the gold crown with copper amalgam, and then, as a lid fits on a box, your patient bites the crown into its place, and remove it if you can. In fitting porcelain teeth for the front in this way, the great trouble will be in getting the pin in the proper position. Drill out the nerve canal; proceed as before; when you have the first collar on, fit the pivot in situ, and cut a small piece of platinum-gauze the shape of the collar and drop it inside, touching the pin, force in some resin wax, and bring out the gauze adhering to the pin; now set it in plaster and powdered pumice and flush some solder over to fix the pin, then a piece of gold plate; having made the second collar, solder the gauze now filled in with plate, and solder to collar No. 2; on this arrange the porcelain tooth in the mouth, and solder it to second collar; the first collar now being fitted to the stump, press it all into place with osteophosphate.
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ENAMELING THE FACES OF ALL GOLD CROWNS.

DR. J. BOND LITTIG.

International Dental Jounal

After fitting the ordinary gold and
fill it with modeling compositior g.
with the ordinary jeweler's s part of the buccal

surface of the gold crown, commencing at the cutting-edge, leaving a ring of gold at the top. Then remove the composition and fit a piece of either thin platinum or gold—I prefer the plantinum—to the inside of the crown, just to the edges of the opening made with the saw. Always thicken the crown at the cusps with solder, using twenty-carat solder for that purpose, and, holding it over the burner, solder the little piece of platinum at one end, and then add the glass filling of the proper shade. It depends a great deal upon how this is fused, whether it brings the color out or not; if it is fused too much, it bleaches; if fused too little, the color is not brought out. After wetting the glass with distilled water, pack it in over the platinum, and with some bibulous paper make it as smooth as possible; then hold it over the alcohol lamp with the pliers. If not plump enough repeat the process until it is contoured to your satisfaction. I have had some of these enameled crowns wearing in the mouth for six months, and there has been no change. I thought it was a sufficient test to justify me in describing the process.

GOLD CROWN WITH AMALGAM BASE.

DR. W. E. BAXTER

Dental Review, April.

Reports a case where a bicuspid root was decayed below the gum, the canals of which were cleansed antiseptically, the root filled with amalgam which was made flush with the gum, the gum walls acting as a matrix for the filling, after the setting of which, a gold crown was placed on it.

INLAYS.

DR. G. V. I. BROWN.

Dental Review, June.

Fig. 1 shows a central incisor from which the anterior proximal surface, including the corner and part of the cutting edge, has been lost by reason of decay, or some accidental cause.

A piece of porcelain tooth is ground to fit the outline of the outer wall of enamel, and to supply the lost contour of the tooth in such manner as to leave the pins intact. A backing of gold or platinum is fitted therein; platinum rolled very thin is burnished to the form of the inside of the cavity, well over the cervical border and lingual wall of enamel, but carefully trimmed away from the labial wall so that it may not interfere with the perfect joining of the porcelain with the enamel on that surface. A platinum pin or post is pushed through the thin platinum lining into the pulp canal far enough to give secure anchorage, then the pieces are removed together without, if possible, disturbing their respective positions, and soldered with pure gold, which is also flowed lightly over the surface of the platinum lining enough to give a slight degree of additional stiffness, so that when the attached pin and lining are again placed in position and burnished there will be less danger of changing form. Next the porcelain corner is placed in position and attached to the lining with a suitable cement, the pieces removed and invested in such manner as to allow gold solder to be flowed into the hollow of the cavity lining and behind the backed porcelain corner, attaching the parts securely, and giving the contoured shape of the lingual surface.

When dressed down, polished and set in shape with gutta-percha, we have an operation that is sightly and strong, and one that will certainly commend itself for trial. The thin line of gutta-percha between the enamel and porcelain soon becomes sufficiently discolored to be but little if at all noticeable.

In such cavities as Fig. 2 illustrates, in the mouths of young people, where it has been my custom to fill with cement for a period sufficiently long to bring about an improved condition of the mouth, I have found a simple form of inlay very useful, made by taking a very thin ribbon of pure gold (very thick foil I have generally used) between the thumb and fore-finger, sliding it up between the teeth, drawing tightly over the surface, and pressing the fingers sufficiently to mark the outline of the edge of the cavity. The gold may then be readily trimmed to the proper shape with scissors, following the line thus marked. Into the center of the concave inner surface of the piece thus formed solder is flowed to stiffen it, and also to fasten two little points for anchorage, made by bending a narrow strip of gold plate, and soldering just at the bent portion,

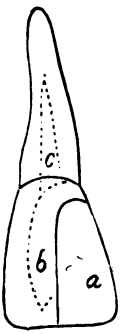


FIG. 1.

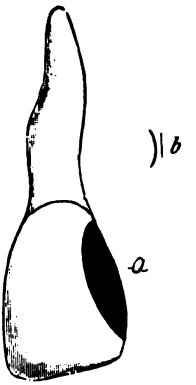


FIG. 2.

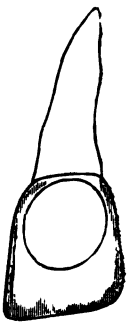


FIG. 3.

a. Porcelain Crown.
b. Outline inside cavity.
c. Outline of pin in position.

a. Inlay in position.
b. Anchorage fastening.

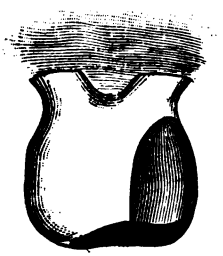


FIG. 4.

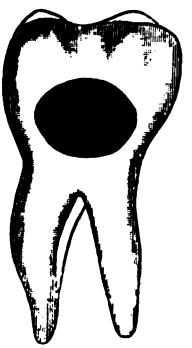


FIG. 5.

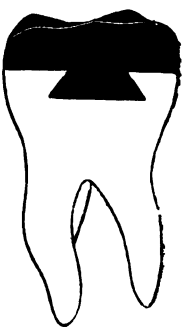


FIG. 6.

leaving the ends free to be adjusted easily when the piece is set in place. I use cement in fastening this class of inlay because the thin edge of gold can be burnished down quite closely as the cement sets, and usually the anchorage is insufficient for gutta-percha.

Fig. 3 represents a very familiar form of cavity, for which inlays may be made by grinding the porcelain piece and the cavity to fit each other, or by burnishing a thin piece of platinum to the shape of the cavity, as before described, filling it with porcelain body, and baking in a furnace, then removing the platinum and setting the porcelain filling thus made with cement usually, though occasionally gutta-percha may be used successfully.

Fig. 6 shows a section of a molar with the grinding surface abraded. It is frequently necessary to lengthen the bite or at least restore the lost portion of the crown of such a tooth. I have some cases in my practice from which the idea is taken, where pyorrhœa had caused recession of the gums beyond the bifurcation of the roots, both in upper and lower molars. Perfect gold crowns were out of the question, or any method that required a perfectly fitting band, and solid gold tops fitted, as shown, with a button on the surface next the tooth for anchorage, have fulfilled every requirement successfully for years without change or dislodgment.

The top may be swaged and filled with solder or built up with wax upon a cast in the articulator from a bite taken with plaster to be perfectly accurate, and the form of the cusps and impressions cut in the wax to perfectly occlude with its antagonist in the mouth and a cast made of the wax top with which again an impression is made in marble dust and plaster, into which a button of gold is melted and pressed with a flat instrument, thus giving a solid gold cast which will accurately fit the position intended for it. To this may be soldered pins or a button, as shown, or any other means of anchoring that will hold securely.

Fig. 4 is the form of inlay that I have used in compound cavities upon the proximal and masticating surfaces of molars and bicuspids. It is made from a piece of gold plate bent in such a manner as to allow one portion to form the proximal surface, and the other the masticating surface; the former being bent to make the surface convex, and thus giving the desired contour; the latter bent to give the concavity suitable to the occluding surface. In order to do this it is necessary to slit each edge a little at the cor-

ners of the angle formed by the bend, and after the shaping is done they are folded over and soldered. Inside the piece may be soldered a slip of bent plate, as already described, or a pin to extend into the pulp cavity, if there be no live pulp to interfere. The edges are cut to fit the outline of the bowl of the cavity on a cast, or by actual trial in the mouth.

Cavities upon the buccal surfaces of molars and the labial surfaces of the anterior teeth, especially where they extend below the line of the gum margin, can be very satisfactorily managed, as shown in Fig. 5, by trimming a piece of gold plate with beveled edges to fit as nearly as practicable to the outline of the cavity, soldering a little fastening of bent gold strip, the same as in Fig. 2, upon the inner side, filling the cavity with gutta-percha and pressing the inlay into place. One gains all of the unquestioned advantage of gutta-percha over all other fillings in this position in the mouth, and has it at the same time protected by a shield of gold that is cleanly and will absolutely prevent its being worn away.

In my experience where gutta-percha can be used to set them without danger of displacement (which of course greatly limits the general usefulness in the mouth) I have found inlays to be in almost every case more successful than any other kind of filling, especially where recession of the gums makes the use of a crown band questionable. When disintegration has begun, and the washing away of the cement line between tooth and porcelain has commenced, dry out the crevice at the line of junction with alcohol, then saturate a pledget of cotton with eucalyptol and wipe over it. Upon this put a solution of chlora-percha, and over this rub warm gutta-percha until it is thoroughly worked into the joint. This leaves the cement inside protected from the secretions of the mouth by gutta-percha.

GOLD INLAYS.

DR. AMES.

Dental Review, June.

Take an impression and make a cast of copper amalgam, burnish No. 120 gold in it, or platinum; fill with solder and cement in.

PORCELAIN CROWNS.

DR. E. PARMLY BROWN.

Ohio Journal Dental Science, October.

A band is made of platinum to fit the end of the root, and is left wide enough so that it may be cut in slits all around down to the face of the previously prepared root; the projections are then bent down, one at a time, over the end of the root, forming a complete covering or cap. A Brown or Logan crown is placed in position, the pin passing through the cap into the pulp canal, and cap and tooth crown removed together and fused together with porcelain in the furnace. The cap may also be soldered onto the crown.

ANCHOR POSTS FOR CROWNS.

DR. A. W. HARLAN.

Uses small brass screws screwed into the roots.

MOULD FOR GLASS FILLINGS.

MR. HENRY WEISS.

Journal, British Dental Association.

Taking, for example, a neck cavity in an upper central incisor, it is first necessary to prepare the margin of the cavity, that is, to carry this back until an unbroken line of healthy tissue is obtained; for until this is effected it cannot be expected that a perfect adaptation between the cavity wall and the glass inlay will result, for after the inlay has been fused no alteration of the margin line must be made. Having obtained this, a small quantity of the deeper caries should be removed, but in no instance should any sensible undercuts exist, as they are likely to prevent the mould being withdrawn. To obtain a mould, gold foil, or platinized gold of twelve grains, should be employed; and I may here mention a difference that exists between the two metals: Platinized gold does not fuse at the same temperature as ordinary gold foil, and it does not apply itself so readily to the margins of the cavity, having a tendency to

spring from its increased hardness. Having cut a square piece of foil large enough to exceed the cavity to a considerable extent, it is folded into four and then opened; by this means we obtain an apex which will pass to the bottom of the cavity. With the index finger of the left hand, the foil is held at the margin of the cavity, and with a small pellet ot cotton wool held in the dressing forceps in the right hand, the wool is firmly pressed against the gold, and continued until it has been adapted completely to the margins of the cavity. The index finger of the right hand may then be freely pressed against the wool and the overlapping gold foil, until it applies itself against the entire cavity, part of the gum, and surrounding tooth. If the gold is not previously folded, it is liable to burst by the pressure of the cotton wool, thus affording a leakage when the glass is being fused.

RESTORATION OF BROKEN INCISORS.

DR. E. AMEND.

Dental Cosmos, June.

When about half of a crown is absent and the pulp involved to a degree incompatible with its preservation, it has seemed to me desirable to retain the crown stump rather than to amputate it and place a porcelain crown on the root. My own method of procedure

FIG. 1.

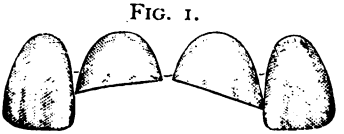


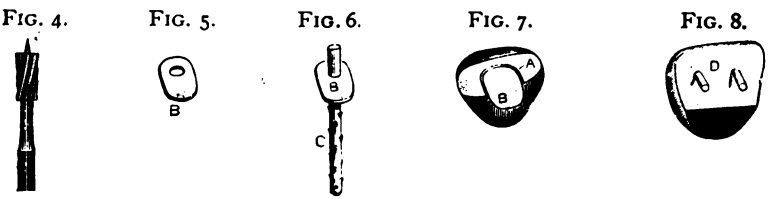
FIG. 2.

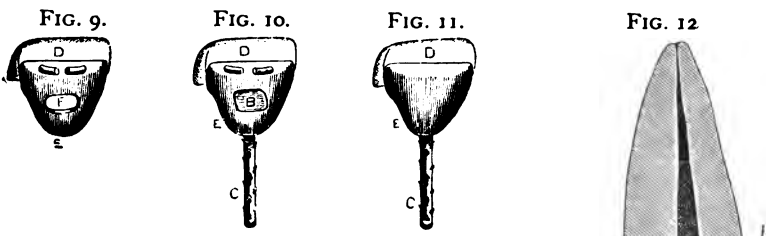
FIG. 3.

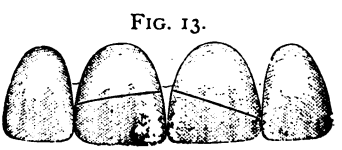
is as follows: For example, we will suppose the superior centrals to have been broken, as shown in Fig. 1, and the right central selected as a model for the description, which will equally apply to the other central or to any incisor under like circumstances.

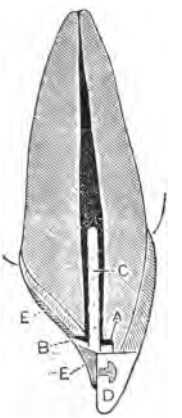
Free access to the pulp-chamber is gained by cutting an oval-shaped opening, like that seen in Fig. 2. After thorough treatment and the subsequent filling of the apical part of the canal, a countersink or recess A, Fig. 3, is cut in the end of the crown, preferably with an engine pin-centered burr, like Fig. 4, followed by a wheel-

bur cutting also on its end to form the rearward slot of the recess. A piece of thick gold or platinum plate is drilled and cut to near the shape of B, Fig. 5, and then fitted in the recess A, Fig. 3. A suitable post, C, is then inserted through the plate, to which it is secured by wax, removed, and soldered, with the result shown in Fig. 6. The end of the post is then cut off flush with the plate, and the piece replaced on the crown, as seen in Fig. 7, leaving the plate projecting from the recess, as shown. A short, thin cross-pin matching-shade plate tooth like D, Fig. 8, is selected, ground to fit









the smooth natural crown end, and then backed with thin platinum, which is shaped and conformed to the lingual face of the crown. With the plate-punch and a small fissure-bur, a slot, F, is cut in the extension of the backing E, Fig. 9, to allow the plate C to project through it, replaced in the crown, secured with hard wax melted over it with a hot burnisher, removed, invested (Fig. 10), and soldered so that the gold flows over the backing and its extension. The finished piece is shown in Fig. 11. This is then secured in the root and to the crown with cement, a thin film of which almost invisibly joins the porcelain tip to the crown and makes an imper-

vious joining of the backing extension to the lingual face of the crown. The enlarged view, Fig. 12, shows in detail the relation of the several parts to each other, and Fig. 13 exhibits both centrals thus restored. The recessed plate and backing extension prevents any turning of the structure, while the post secures it against displacement under the strains of incisive use.

Much of the preliminary work may be done from an accurate impression taken after the ends of the crown have been ground smooth and true, but the fitting, assembling, and soldering of the pieces should be done while the patient is present, in order to insure the nicety of adaptation on which the permanent success of the operation will depend.

EPPERSON GOLD CROWN.

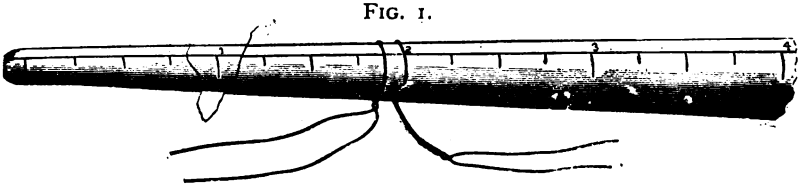
DR. J. H. EPPERSON.

Dental Cosmos, August.

All know how hard it is to make gold flow over porcelain in making crowns where porcelain tips or fronts are used, as in bridge-work. The process to be described forces fused gold all over the porcelain surface wherever it may be desired, and is also a great saving in time and material.

When the root has been properly shaped by trimming off all overhanging points, take the measure with a piece of binding-wire

FIG. 1.



twisted tightly around the stump; get the shape of the root from the wire on the end of a piece of hard wood, and place the wire over the graduated mandrel, (Fig. 1), which is like a gauge for measuring finger-rings, only smaller at the point—one-fourth of an inch in diameter at the small end and five-eighths of an inch at the large end. After having adjusted the measure to the smooth,

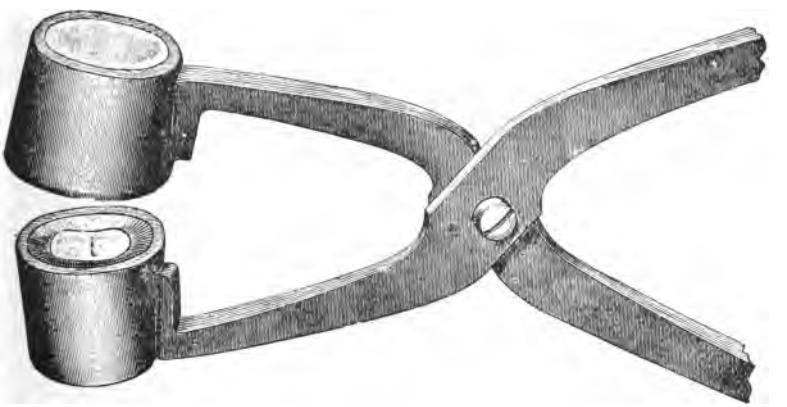
round surface and passed it up as far as it will go easily, take another piece of wire, pass it around just below the one for measuring, bring the ends together, giving them one turn, pulling the ends in opposite directions, and you will have a single lock; slip it off, loosen, and unlock without straightening the wire at the lock. By straightening the part between the locks you have the exact length

FIG. 2.

FIG. 3.

of the band, which is to be cut and soldered, and will then be correct as to size. Fit it to the wooden mandrel that you have made, then file and fit it to the gum exactly, so that it will strike the gum on all sides at once. Adjust the band to the tooth; it should go on tightly, with the edge just under the free margin of the gum; grind off the outer edge of the band until the natural teeth will come

FIG. 4.



together. Fill the band about three-fourths full of wax, and while it is in place take a bite with wax. If the band does not come off with the wax—which it hardly ever does—remove it and replace it in its place in the bite, and discharge the patient. Then with a

hot spatula fill the band with wax, pour plaster and place it in a small crown articulator. After the plaster has set, warm and separate. Now take off the band and fit it to a piece of platinum inside just below the edge of the lowest place in the band, (Fig. 2), and, if it is for a pulpless root, put in one or more platinum pins to hold on the crown. With white wax build up a crown until you have a good articulation; contour the sides to suit your taste or to fill the space. Trim the wax to the exact shape the crown is to have (Fig. 3) when done. Then invest in the smaller ring (Fig. 4) with plaster and asbestos. After it has set, cut away the plaster over the wax. Soap investment and fill the large ring, close as you would a flask, and put a rubber band over the handle ends to hold it together. After the investment has set, open, warm, remove the wax, and dry

FIG. 5.

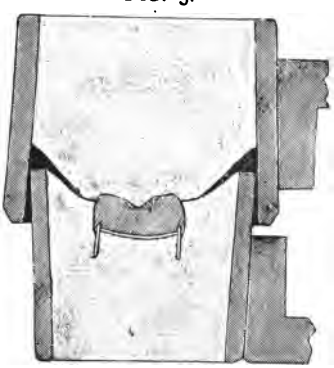


FIG. 6.

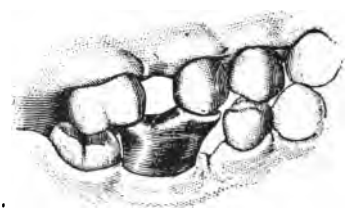


FIG. 7.

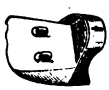


FIG. 8.

thoroughly. Now place it on a heater (use Fletcher's gas heater) or in a stove, and heat it red hot; put in gold scraps, which have previously been melted into a button, so that they will not take up so much room. With the blow-pipe thoroughly fuse the button, and while it is melted press together the rings (which were held about one inch apart). Let it cool a minute or so by turning off the gas; then open, and, if you have not put in gold enough, put in some more and heat again. But it is better to have gold enough the first time, for so much heating endangers the band. There should be a little surplus gold, so that it will mold under pressure. Fig. 5 is a section through the full-sized rings to show how the investment in the large ring has been cut away so that only the cusp part of the matrix shall shut closely and force out the surplus.

Cool, grind off the points, smooth the surface, polish, and set in the usual way. (Fig. 6).

Now you have a crown that will last a lifetime, fill the space perfectly, and articulate exactly. But if you should get one on too long you can grind it with perfect safety, as the cusps are thick and heavy.

Fig. 7 shows a plain plate central ground to fit a floored band like Fig. 2. No backing is required, but the pins are bent flat on the back, and the tooth secured to the band with hard wax as usual. When invested in the smaller ring (Fig. 4) and the wax removed, the piece will resemble Fig. 7; and when the gold has been melted in and molded by pressing the rings together, the cooled piece will appear as shown in Fig. 8, requiring merely to be finished and mounted.

REMOVABLE CROWN AND BRIDGE WORK.

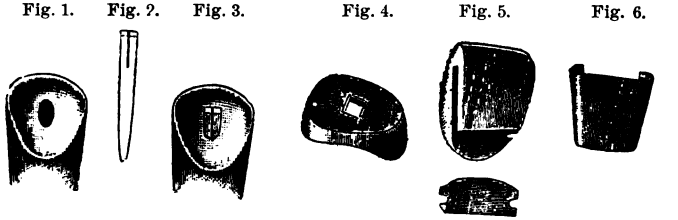
DR. C. S. WIGGINS.

Dental Cosmos, August.

The two main features of the improvement to be described, are the removable attachment of a collar and its crown-backing to a tooth root, and the removable attachment of a porcelain face to the crown-backing. Such an organization may constitute a single dental substitute, or several of them may serve as piers for a bridge denture.

The root end should have its margin slightly rounded, and the surface concaved, as shown in Fig. 1. The post has its outer end

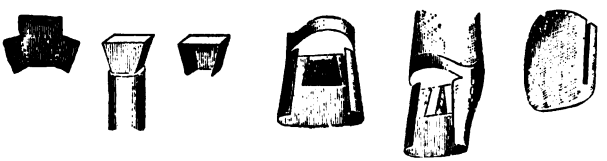
Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 5. Fig. 6.



split, as in Fig. 2, and is then securely set in the root with amalgam, which also fills the concavity and is made flush with the margin, (Fig. 3), thus protecting the root end from attack by caries if by

any means the oral fluids were to gain access to it. A disk of thin platinum plate is punched to allow the passage of the projecting post, and is burnished over the face and margin of the root end, and may in some cases be carried over the sides to form a collar, but usually a collar is first fitted to the root, and the cap fitted to the collar. Gold or 20-carat solder is then flowed over the cap to thicken it and unite it to the collar. (Fig. 4). A plain plate tooth is selected, the pins cut off, and the back ground flat. With a diamond disk, or an E corundum disk, the sides of the tooth are grooved as in Fig. 5, and a thin platinum backing, like Fig. 6, fitted to the tooth and burnished into its grooves so that it will readily slide in and out of the backing. Pure gold is then flowed over the back of the backing and its flanges to stiffen it. A piece of platinum plate is cut to resemble Fig. 7, and bent upon the shaper, Fig. 8, into the form of Fig. 9. This box is then neatly soldered with pure gold on the back of the backing, the wide end of the box pointing outward. The backing and its grooved tooth

Fig. 7. Fig. 8. Fig. 9. Fig. 10. Fig. 11. Fig. 12.



are then adjusted upon and fitted to the cap on the root, and the cap and backing secured to each other by hard wax. After careful removal the grooved tooth may be slid from the backing, and this invested so that solder may be flowed over its back and the box to give strength and contour. Then that part of the backing inclosed by the box is cut away with an engine bur (No. 37 or 59) up to the borders of the box, as shown in Fig. 10. This united cap and backing, after putting a very little cement in the cap, may then be placed upon the root, the split ends of the post be forced apart within the box, and so firmly secure the cap and backing upon the root. (Fig. 11.) A little cement is then packed between the split-post ends and on the end of the grooved tooth, (Fig. 12), which is then forced into place, making a sightly and firmly mounted superior central tooth-crown, as illustrated in Fig. 13. The sectional view, Fig. 14, shows the organization in all its related parts.

Figs. 15 and 16 exhibit a bicuspid crown similarly constructed. It is obvious that the porcelain face may, if desirable, be slid from its seat, exposing the separated ends of the post so that by picking out the cement and pinching the post ends together the cap and backing may be readily taken from the root, and as readily reset upon it. So, too, in the event of the breakage of a porcelain, another may be grooved and ground to fit the backing.

Fig. 17 shows the bridge organization, the part between the piers being made up of soldered socket-backings. The absence of the grooved porcelain from the right cuspid makes clear the removable anchorage of the bridge upon its pier root, and the absence of the

Fig. 13. Fig. 14. Fig. 15. Fig. 16.

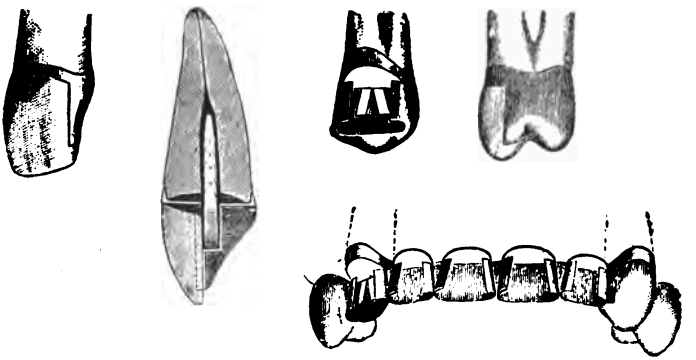


Fig. 17.

incisor porcelains shows how easily they may be taken off or put on without the least disturbance of the bridge.

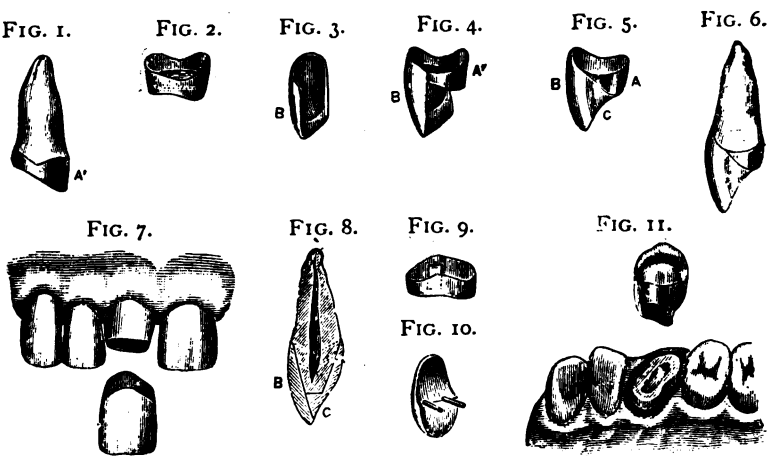
By the method thus briefly described it is practically demonstrable that a single artificial crown or a bridge denture may be made without the application of heat to the porcelain faces, and that these, their sockets, or the bridge may, for repair or for any purpose, be removed or replaced by the dentist without injury to the supporting roots or inconvenience to the patient under any ordinary or even extraordinary circumstances attending the provision of secure and permanent dental substitutes.

HUNT PLATINO-PORCELAIN CROWN.

DR. P. G. C. HUNT.

Dental Cosmos, September.

Make a platinum band of about No. 28 gauge to fit the root, being guided by the bite as to the width of the band, preferably made like Fig. 1. If extra strength is desired, fit a floor of platinum on the root-end within the band, (Fig. 2); usually the plain band is all that will be required. Take a plain plate tooth and grind it hollow and thin, (Fig. 3), to cover the labial aspect of the band. Adjust, articulate, and secure the tooth, band, and floor with hard wax so that they can be removed for investment in



asbestos and plaster. In Fig. 4, A is the band, and B the porcelain fitting the band. Pack White's block body (of as near the shade of the porcelain as may be) into the space between the band, floor, and porcelain; build up the body to the desired contour, and biscuit hard in the Parker-Stoddard furnace. Remove the investment from the sides of the porcelain to clearly disclose the outlines, add body to compensate for shrinkage, and glaze in the furnace, with the result seen in Fig. 5, wherein A is the band, B the porcelain face, and C the naked body. Fig. 6 shows the mounted crown.

When a defective tooth requires a crown which shall not encroach upon the pulp, the sides and face of the natural crown are to be cut away, as shown in Fig. 7, taking care to lower the labio-cervical part of the crown so that thickness of the facing and

its band shall not cause protrusion of the artificial crown. Fit a platinum band or cap to the stump, and proceed as previously directed. Fig. 8 shows a section of the root, stump, and mounted crown, which is seen ready for mounting in Fig. 7. Sometimes, instead of an entire floor, a transverse brace like that of Fig. 9 connects the sides of the band, or two or three headed platinum pins may be soldered on the inside of the band.

In facing a bicuspid root, the plain cuspid tooth or thin S. S. W. facing may be so ground as to retain the pins (Fig. 10) on which to rest the floor or brace of the band. Fig. 11 represents a case in practice, wherein the obliquity of the bicuspid root end and the breadth of the gap to be filled made a perplexing problem, which was well solved by selecting a broad porcelain cuspid and proceeding as previously described.

In many instances where the difficulties of the case seemed otherwise insurmountable they were readily overcome by this method, and after some experience in its use it will be found to fulfill the requirements of many of the ordinary cases in practice. Any difficulty previously experienced in matching the adjoining teeth for color is obviated by using the ground facing.

GLASS FILLINGS.

DR. WM. H. METCALF.

Dental Cosmos, October.

To get the colors, grind glass beads—white, yellow, amber, and blue—separately in an ordinary Wedgwood mortar. It is not necessary to grind under water if the mortar is covered by a cloth or towel to prevent the glass from flying out. When the colors have been ground fine, mix them in different proportions until you have the standard colors for teeth, baking samples on gold foil, or in plaster molds.

Keep the colors in glass bottles, which label and number to correspond with the S. S. White sample color teeth. Insert a sample baking of each color into the cork of its bottle. In this way you can easily and expeditiously get an approximate color for immediate use. Some of the amber and light-brown junk bottles are

useful in getting suitable tooth colors, and especially the yellow bottle in which phenol-sodique is put up.

For example, take a labial cavity in an upper incisor, near or under the gingival border. After adjusting the rubber-dam, pin back the gum with a simple but most ingenious contrivance of Dr. Herbst, which is simply a needle bent twice at right angles, bayonetwise. Take an ordinary steel needle about three and one-half inches in length, and with pliers snap off the eye. Then draw the temper of the half nearest the blunt end over the flame of an alcohol lamp, and make two bends at right angles. This has served me better than any of the more complicated steel clamps made for the purpose of forcing and holding back the gum.

With the point of the needle push back the gum with the rubber-dam until the cavity is fully exposed, then force the point of the needle firmly into the cementum, and throw the upper edge of the rubber-dam over the blunt end of the needle, thus holding it securely in place. The gum is effectually pinned back. Prepare the cavity for filling as for gold, in the usual way, but make no bevels or undercuts. Take an impression with a bit of heavy gold foil, say Globe No. 60. It requires care not to split or tear the foil; so first crinkle it in the fingers, and then gently push it into the cavity with a wad of bibulous paper or cotton. Lift the gold out carefully with tweezers, and place it upon a net-work frame made of fine platinum wire.

Then selecting the color, put a little of the powdered glass into the gold matrix or impression, and fuse it over an alcohol flame, taking care not to melt the gold foil. Then carry a drop of water into the matrix with the point of an instrument, and add more glass, repeating this until completely full, watching after each baking to see, by comparison with the tooth, that the color is correct.

Before inserting the filling make a very slight undercut in the cavity to hold the cement firmly. Care will be necessary in carrying the filling to the tooth, but by waxing the end of a match and sticking the filling thereon it is safely and readily handled. Mix the cement to a creamy consistence, and, after placing enough in the cavity, push the filling into place. A little practice on teeth out of the mouth will soon give confidence and expertness, and enable one to insert a filling at once esthetic, durable, and artistic, and worthy to be classed among the best dental operations.

TO REMOVE COLLAR CROWNS.

DR. R. M. SANGER.

Dental Mirror.

With a sharp spear drill, lubricated with glycerine, drill through the backing at a point over the pin. If the drill is well tempered, this will not be very difficult. Enlarge this hole slightly with a round burr, then with a wheel burr cut the pin free from the cap. The crown can now be worked off without mutilating the band. Next the pin remaining in the tooth root must be removed. To do this, burr away the cement around it with a fine spear-pointed fissure drill, being careful not to cut the metal itself. This should be done to a depth sufficient to allow a firm grasp of the pin with the sharp-nosed pliers now supplied for bending the pins of artificial teeth. Do not attempt to draw the pin out by direct force, but twist it slightly to disintegrate the cement, when it will be found that the pin will come away with little effort. You have thus succeeded in removing the crown without mutilation.

To replace the crown, insert a platinum and iridium pin through the opening in the backing which was drilled to release the original post. Fasten into position with hard wax, remove carefully, invest and solder.

REPLACING BUCCAL CUSPS OF BICUSPIDS.

DR. WM. JARVIE.

International Dental Journal, April.

Take a cuspid plate or rubber tooth, grind grooves in it, and cement on, or utilize the pins in the tooth for holding the cement.

SLADE GOLD CROWN.

DR. S. C. SLADE.

Items of Interest, August.

Take a bicuspid, for example. Keep it dry. Mix up some oxyphosphate soft, place enough on the root to form a phosphate crown, molding it into shape and size wanted while it is hardening.

Before it is quite hard let the patient bite onto it, to give the right occlusion. When hard take the measure around the neck of the tooth for the size of the gold band, then take an impression of the phosphate crown with Melott's impression compound, and run a die with Melott's metal. Place the gold plate for the cap on a flat piece of lead, and with this die swage the cusps into the gold. When the cusps are formed, make the gold band, place it on the die, and with the band on the die gently swage again the cap with the cusps formed, till the cap and band are brought close together all round; then solder the cap to the band, file and polish, remove the phosphate crown from the root and place on the gold cap.

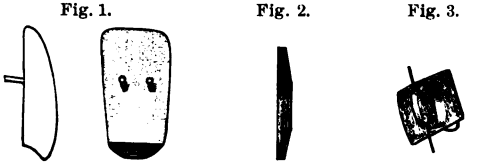
ALEXANDER BRIDGE.

DR. W. L. ALEXANDER.

Dental Cosmos, January.

The common method of subjecting the porcelain faces to the heat and subsequent cooling attending the process of soldering the backings and caps, results frequently, in inexperienced hand, in checks or fractures of the porcelain. Avoid such risk by the use of teeth or facings having long pins, as in Fig. 1. The facings

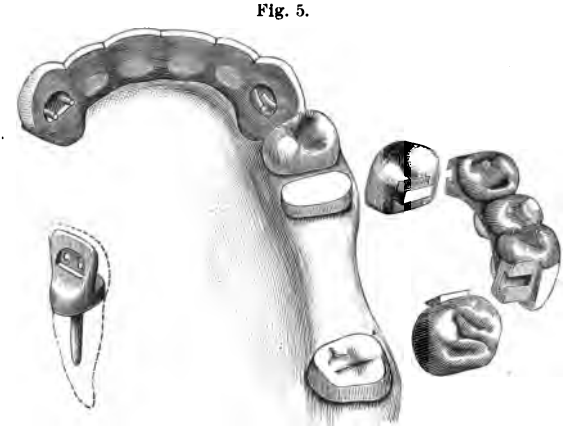
Fig. 1. Fig. 2. Fig. 3.



are fitted to the gold or platinum backings as usual, then articulated and adjusted with relation to their anchorages, and suitably cemented in position with hard wax. The facings are slightly heated with a hot instrument to soften the wax around the pins, then carefully removed without disturbing the backings; half-inch pieces of fine iron binding-wire are bent to form staples, their ends heated and pushed through the pin-holes in the backings, leaving projecting loops of wire which serve as an anchorage to the backings when invested. The case is then invested in plaster and marble-dust. From a strip of very thin pure gold or platinum three thirty-seconds of an inch wide (Fig. 2) small oval ferrules

are formed. The hard wax is then removed from the backings, and the little ferrules set on them to surround the pin-holes, (see Fig. 3), and are fixed in place with hard wax applied on the outside of the ferrules. These are then neatly filled with plaster and marble-dust, and when this has hardened the wire ends are bent close over the edges of the ferrules to prevent their displacement in the removal of the wax and in the process of soldering. The soldering will unite the ferrules to the backings and at the same time join the backings to each other and round up the piece to the required fullness in the completion of the bridge-backing. The skeleton bridge can then be tried

Fig. 5.



in the mouth, and if any corrections for fitting are required they can readily be made by bending it, or by sawing the piece apart and resoldering. After rough-finishing the piece, the facings are then put in place with a very little thin oxyphosphate cement between the teeth and the backings, and the pin-ends are bent down on the backings within the little ferrule chambers. These are then packed with amalgam, mixed as dry as will afford complete amalgamation, and pressed firmly into the chambers and around the pins. So soon as the amalgam has become hard enough to file without choking the file, the piece is to be finished and mounted as usual. Fig. 5 exhibits such a finished piece, the cuspid chambers being left unfilled to show the unbent and the bent-down pins within the chambers. In the same figure is shown the skeleton of a left central crown ready to receive its porcelain facing.

This work can be readily repaired in the mouth by cutting out the amalgam from the chamber and securing the new facing, as previously described. A notable advantage of the method is the avoidance of gold-tipped oral teeth. Of course the bridge may be permanently secured to its supports by cement as usual.

Fig. 6.

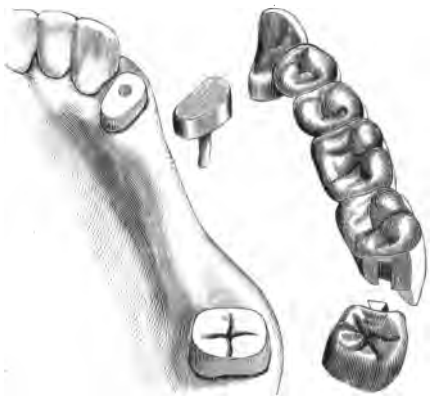


Fig. 5 shows also an outwardly removable bridge, the dovetailed sockets of which admit of wedge-tight insertion in a horizontal plane, and the denture is therefore not liable to be displaced by the lifting action of food during mastication.

Fig. 6 shows a removable bridge adaptable to inclined teeth, which may be capped and carry tapering dovetailed sockets like that of the molar in the illustration.

GENESE CROWN.

DR. D. GENESE.

Items of Interest, August.

Prepare the root and canal in the usual manner. Take an impression of so much of the upper and lower teeth containing the root, so as to obtain a model that will give accurate articulation. Choose the crown suited in form and color to the case. Select that post which will fit the canal easily, and yet tightly. Having the model prepared, grind the crown to fit the root and articulate with the opposite tooth. Fill the apex of the root. Place the post in

the canal and try the crown on the root with the post in position; if the post be too long, file it off till the platinum lining of the crown and the post touch with the tooth in the desired position. Dry the tooth and post. Fill the platinum cup in the tooth with Fowler's Sticky Wax. Warm the post, tap it into place in the tooth, and finally adjust as you desire. Cool the tooth with water, so as to harden the wax in the cavity; and then carefully remove the tooth and post by gently withdrawing them.

Mix any investing material—Teague's Compound is the best—put it on a piece of tin or glass, press the tooth into it, and with it cover the tooth, except the cavity, letting the holder (Fig. 1) support the tooth invested in the lower part, the end of the post coming through the top slot. By putting the investing material over it, the post and tooth will be held securely in place, as illustrated in Fig. 2. This will leave the end of the tooth and post clear to view. When the investment is dry enough, melt the wax from the

Fig. 1.

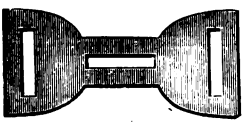
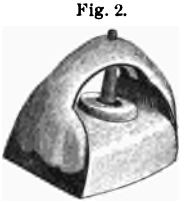


Fig. 2.



cavity, which should then be clean and dry. Add the flux. Put the solder in thin strips so that it will pass down between the post and the tooth, and touch the platinum lining. Gradually heat the investment, and, when thoroughly dry, solder.

When the crown and post are ready for cementing into position, dry the root canal. Rub up some amalgam dry; mix a sufficient quantity of oxyphosphate of zinc; add to this an equal bulk of the amalgam and work up together. This will give a slow setting cement of great density, and one impervious to moisture.

Solid or hollow posts may be used at pleasure. They may be barbed, and it may be found advantageous to insert a wooden point into a plugger or any mallet, and with it give a few taps, which will drive home the crown securely and in the right direction.

Should a frail root be met with—hollow at the surface—it can be successfully and delicately crowned by using a disk of gold or platinum cut in star shape with a center hole, slipped over the post

and soldered into place. This will steady the post and crown without undue pressure upon the sides. The fine part of the post will reach the apex, and the collar will support the base of the root. The openings in the collar will allow the cement to escape if it be too full.

A collar or band can be put upon these crowns in the shortest space, having no overlays on the crown, yet soldered so thoroughly as to leave no weak point or space for entrance of moisture.

If desired to band instead of pivot, fit the band to root, having the crown adapted also.

Take a plain disk of soft platinum or gold larger than the root, place it over the end of the crown and burnish it on, puncturing the center and turning it into the platina cup. The band is then placed on and waxed into position, invested, and the band, disk and tooth soldered together.

When trimmed up, the lower edge of the band is flush with the top edge of the tooth, leaving the crown clear of metal and only the narrowest band required on the root, with no possibility of moisture entering the space.

If the root canal is curved, use flexible drills for cleaning. Anneal the pivot post, apply a little vaseline and gently tap it into place; it will conform to the direction of the canal, and can be withdrawn for soldering.

If the platinum lining is filled with wax before grinding, it prevents moisture or dirt from getting into it; and when warmed for fixing the post is sure to be held tightly in position.

REPLACING GOLD FILLING BY PIVOT.

DR. J. E. MILLER.

Items of Interest, August.

A large gold filling on a pulpless lateral incisor broke away. A hole was drilled in the filling the size of 20 English gauge, made a pivot by rolling platina foil on itself and flowing solder through the folds to stiffen, then soldered this pivot to the plug, barbed the root end and cemented the plug back in place with oxyphosphate. It seems strong as ever after three months' service.

RECIPROCATING TOOTH MOVEMENT—A STUDY.

DR. HENRY N. DODGE.

Dental Cosmos, December.

On the 19th of February, 1891, a little girl ten years of age was brought to me in the evening by her mother, who had noticed something wrong with one of her daughter's teeth. Upon examination, I found a crack across the front of the upper right central incisor, less than a sixteenth of an inch from the edge of the gum. Passing horizontally across the labial surface of the incisor, this crack extended thence at either end to the mesial and distal sides of the tooth, and, being deflected sharply upward, disappeared under the gum. The tooth was broken across the front, and split off diagonally far up in the alveolus. Pressing the crown of the tooth gently backward with the finger, the living pulp appeared through the fissure, and when pressure was discontinued the tooth immediately resumed its normal position and the fissure closed.

The patient had fallen on the ice that morning, and a severe contusion of the lower lip immediately under the broken tooth, together with the line of fracture, suggested the conclusion that the tooth had been broken by striking the ice at the time of the fall. That same evening a splint was improvised—a strip of gold plate perforated with four holes, tied across the lingual surfaces of both central incisors and cemented fast to protect the injured tooth from further accident. The case then rested for further consideration.

The parent of the child requested that everything possible should be done to restore the natural tooth, and clung to the hope that vital reunion of the parts might be effected. This, as the records show, might possibly occur, although highly improbable; but still a sufficient number of authenticated cases justified delay, and the application at the next sitting of a more secure splint of gutta-percha molded upon the four incisors and fastened with ligatures and cement. The shortness of the teeth, and especially the lateral incisors, made it quite difficult to secure any fastening at all.

At length, after temporizing until the 2d of March, pus was seen to ooze through the fracture, and whatever hope of reunion had been entertained was thereupon abandoned.

It was now decided to remove the broken part of the tooth

and replace the same upon the root exactly as before the fracture, in order, if possible, to gratify the expressed wish that no artificial substitute should be employed.

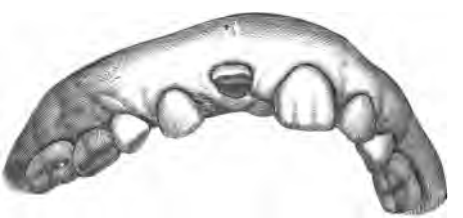
In order to avoid injury to the crown by the use of forceps, a piece of strong bookbinder's twine was passed into the fracture and tied with ends long enough to be wound around the operator's hand. After the application of cocaine upon the gum, the crown was removed by one strong pull upon the twine, when it was found to present the appearance shown in Fig. 1, the figure being enlarged to show details. It will be noticed that the line of fracture, after leaving the labial surface of the tooth, extended obliquely across the root to its posterior or palatine surface, and there terminated at a point five-sixteenths of an inch above the margin of the gum.

FIG. 1.

FIG. 2.

In Fig 2 a sectional view of the crown is given. This section was obtained in the following manner, without cutting the tooth: The crown was pressed edgewise into a softened piece of "modeling composition" until one-half of it was imbedded therein. After hardening the "modeling composition" in cold water, the broken tooth was removed, and the impression which it had made was filled as a matrix with amalgam, which, when hard, was filed to an

Fig. 3.

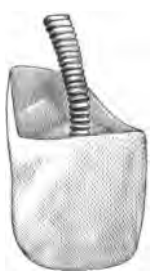


even surface and photographed. Fig. 3 represents a cast made from the mouth at this point, with the broken tooth removed, the labial edge only of the root being visible, and the remainder lying deeply buried in the alveolus. The other incisors are also shown, immature and only partially erupted. In the root canal lay the remains of the living pulp, sensitive to the slightest touch. To apply arsenic now for its extirpation was out of the question, since it would be impossible to prevent it from coming in contact with the gum and pericemen-

tum. Resort was had to frequent applications of pure carbolic acid to the pulp, causing repeated sloughings of the surface, until the canal was so far empty that a dressing could be retained. Then a broach wrapped with cotton was moistened in carbolic acid, the point lightly dipped in dry arsenious acid. With this the pulp was slightly touched once only with a twirl of the broach, and the orifice of the canal instantly closed with gutta-percha. Next day the pulp was removed entire. The canal, clean and free from debris, was thoroughly dried and wiped out with pure carbolic acid, and an immediate root-filling, closing the apical foramen and upper third of the canal, was made of a gutta-percha point packed tightly home with heated instruments. The remainder of the canal was temporarily closed.

A piece of gold screw-cut wire was now cemented into the broken crown, as shown in Fig. 4. Before fastening this pivot or post in place the pulp-cavity of the crown had been enlarged, undercut, and shaped with a flattened floor. A piece of stiff gold plate, wider than the thickness of the wire, had been strongly soldered upon one end of the post and at right angles to it, forming a T-shaped foot that would rest upon the floor of the pulp-cavity and almost cover it. This foot had been dipped into thinly-mixed cement, and, being pressed into place, the remainder of the cavity above it had been filled with cement mixed stiffly and allowed to harden thoroughly. The free or upper end of the post had been slightly enlarged by hammering. When the crown was first removed from the mouth the soft tissues closed firmly upon the broken root, and a question arose of keeping the fractured surface dry long enough for a careful adjustment and fastening of the crown upon it. At first an attempt was made to force back the gum with cotton tightly compressed. This failed. A part of the root-canal was then tapped for a gold screw. The screw being turned firmly into place in the root, an oblong piece of stiff platinized gold plate, drilled at one end with a hole larger than the screw, was bent into a quarter-circle. This was so placed that the screw in the root passed through the hole in the plate, the plate curving upward toward the palate so as to cover that portion of the gum to be forced away from the broken root.

FIG. 4.



A bit of cotton, firmly compressed, was placed upon the gum under the curved plate, and a gold nut, put upon the screw, was turned firmly down upon the plate, forcing it and the cotton upon the gum.

This apparatus, shown in Fig. 5, worked powerfully, but the mass of tissue was too great to be thus disposed of, and after a few days inflammation supervened, which threatened to result in pericementitis. It now seemed necessary to remove the troublesome tissue by excision, and, being debarred from the use of general anesthesia, cocaine was freely applied, and as much as possible of the gum and cartilaginous tissues of the palate removed; gum-cutting pliers, gum lancet, and curved scissors being used. It was useless, for no clamp or gum-retractor could carry the rubber-dam deeply enough into the alveolus to surround the fractured surface and keep it dry. Each manipulation of the parts increase their angry condition. At this point two alternatives were presented, the first of which was to extract the root, fasten on the crown, and replant the tooth. The objections to this plan were the pain of extraction and replantation, and the recognized fact that a certain large percentage of replanted teeth ultimately fail. The other alternative was to draw the root partly out of the alveolus, adjust the crown upon it, and push it back again. If one tooth can be drawn down and another tooth can be pushed up, why could not both of these operations be combined? By this reciprocating tooth-movement, presumably painless, the fracture might be treated without severing the vital connection of the root with the alveolus. The objections to this operation were the fact that, so far as known, it had never before been done; the time necessary for the double movement of the tooth, and, finally, the inadequate fastening for appliances furnished by the other teeth.

FIG. 5.

The patient was not yet eleven years of age, and all the teeth were very short. The three other incisors were immature; the deciduous cuspids had been lost since the beginning of treatment, while the molars afforded but the slightest fastening. Having decided upon the new operation, a stronger screw was fastened

securely in the canal and a rubber plate made to cover the molars and cutting edges of the three incisors. This plate was thickened over the molars in order to keep the jaws slightly open. A broad, stiff spring, made of platinized gold plate, was screwed fast to the lingual surface of the rubber plate, extending forward between the left central and right lateral incisors. The free end of this spring was bifurcated, so that when in place the screw in the root would pass through the bifurcation. The construction of this plate is shown in Fig. 6, and a key by which the nut was turned in Fig. 7.

Fig. 6.

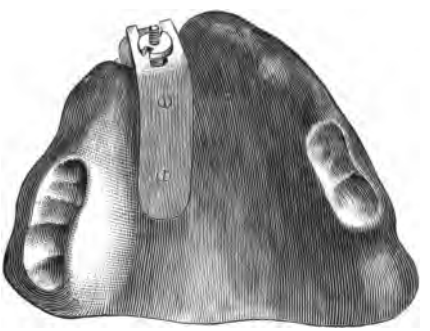


Fig. 7.

Had the cuspids been in place, a delicate gold fixture could have been attached to all of the oral teeth as a basis; but with so few teeth in situ, this rather clumsy apparatus seemed at the time the most practicable. With this plate, traction upon the root began on the 3d of April, from which date should be estimated the time required for the double movement of the tooth. The screw used had about sixty threads to the inch, and instructions were given to turn the nut closely up after each meal. The necessity of removing and cleansing the plate made it impossible to advance the nut with mathematical uniformity, since it had to be loosened before removing the plate, which was first pushed backward when taken from the mouth in order that the bifurcated gold spring might be disengaged from the screw without the entire removal of the nut. At first the root made no response to the force applied; but after a few days it began to move slowly downward, and soon more rapid progress was made. Then several interesting things were observed; for a time the gum clung closely to the root, advancing with it

until the gingival border was almost even with the cutting-edge of the left incisor. Then the gum began to pull away from the root, and, little by little, the overstretched fibres of the pericementum parted and the edge of the gum drew back as if to resume its normal shape. This festoon of the gum, however, never wholly recovered its former position while the root was down, as may be seen in Fig. 8. The denuded surface of the cementum was light brown in color, and covered with torn fibres of the pericementum. During the latter part of the downward movement the gum was slightly everted from the root; there was no hemorrhage, and absolutely no pain. I do not mean to say that the whole manipulation of the root was painless, but that repeated questioning of the patient disclosed the fact that the downward movement was entirely painless. Owing to insufficient fastening afforded by the short molars, there was some movement of the plate during mastication, and as it was fastened to the root by the screw there was at

Fig. 8.

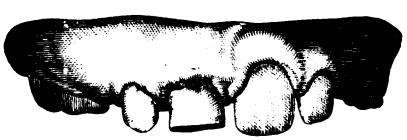


Fig. 9.

times some oscillation of the root, resulting on several occasions in slight pericementitis. This was quickly reduced by removing the plate and substituting a splint of thin gutta-percha, softend in hot water, molded on the teeth, and secured in place by the nut and screw, and by tincture iodine and aconite applied to the gum. In a day or two the tissues invariably recovered their tone and the root resumed its downward course. During these periods of congestion some tenderness upon pressure upon the root, some reddening and slight swelling of the margin of the gum appeared, but no pain was experienced at any time due to longitudinal movement of the root. At one time the experiment was tried of placing a rubber ring for a day or two about the root in order to expedite the retraction of the gum, but with no marked effect. On the 24th of April, twenty-one days after the first application of force, the root was drawn so far out of its socket that the broken edge was nearly even with the cutting-edge of the adjoining central incisor, as

shown in Fig. 8, having moved nearly one-third of an inch in three weeks. As the whole of the fractured surface on the lingual aspect of the root was, however, not yet within easy reach, force was again applied, and after some delays the lingual surface of the root presented, on the 7th of May, the appearance shown in Fig. 9, where the deep edge of the fracture may be distinctly seen. I have been thus particular to give the exact time required for this movement, since, as stated by Farrar on page 168, Vol. I, of his work on "Irregularities of the Teeth," there is some difficulty in securing full and accurate records as to the speed with which longitudinal movements may be effected. It was surprising how well the mouth looked with the broken tooth in its new position, and few persons in conversation with the patient would have noticed anything amiss if it had been slightly altered in shape. And in many cases of fracture the best course would doubtless be to draw down the tooth, protect the broken surface with a filling, and leave it so.

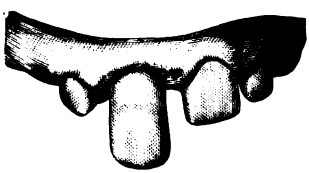
Fig. 10.

In this case, however, nothing less was desired than the perfect restoration of the natural tooth. Several day's rest, with a gutta-percha splint, rendered the root sufficiently firm for the adjustment of the natural crown, which had been broken off nearly three months before. The crown, in the meantime, had been kept moist. At first it was immersed in alcohol and water, but fearing lest too long exposure to this mixture might, as I had observed in other instances where the tooth was that of a child, cause the breaking up of the crown, it was placed, early in March, inglycerine and water, and later in pure glycerine. In this bath both color and texture were perfectly preserved. When the time arrived to fasten the crown in place, it was soaked for half an hour in tepid water, which removed all traces of glycerine. The fractured surfaces of root and crown were then washed with pure alcohol, which cleansed the root and by evaporation rendered both perfectly dry. When attaching a crown, delay and difficulty are sometimes experienced in filling the root canal with cement before crystalization begins, and as it was desirable to insure success in this instance at the first attempt, the little syringe shown in Fig. 10 was invented. It was

easily made in a few minutes from a piece of glass tubing and a pine stick. The glass tube was filled at the large end with thinly mixed cement, which was immediately injected into the root, the small end of the syringe being held at the orifice of the canal, which was thoroughly filled with one movement of the piston. The fractured surfaces were covered with a thin film of cement, the crown pressed firmly into place, all moisture excluded by rubber dam held by a clamp for an hour and a quarter, and the mended tooth was tightly wrapped with a silk ligature for a day or two to prevent displacement. The appearance of the mended incisor is shown in Fig. 11, and, as remarked by a friend of the patient, it was truly a "prominent tooth!"

It was now necessary to protect the tooth from contact with the lower incisors, for the diameter of the root where they touched it was much greater than the corresponding thickness of the upper

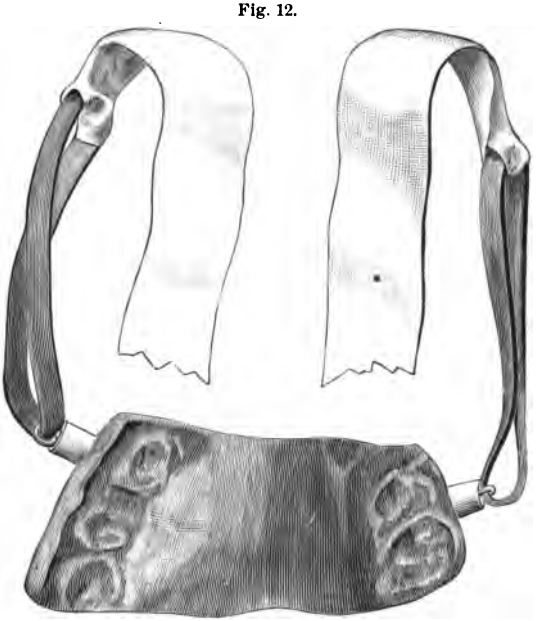
FIG. 11.



left central. To keep the jaws asunder, therefore, an old upper plate, which had been made for this case but discarded, was now hastily cut down so as to cover the upper molars only, and as it was impossible to make it hold fast, two gold screw-eyes—convenient things to have at hand—were inserted into it, one near each angle of the mouth. The angles of the mouth were protected from abrasion by a bit of rubber tubing slipped upon the shank of each screw-eye; an elastic ring was put in the eye of each screw, and a ribbon fastened to each elastic; these two ribbons, tied at the occiput, held the plate in position. This plate is shown in Fig. 12. As soon as practicable this fixture, somewhat uncomfortable during mastication, was replaced by a lower plate, covering the molars, passing across the lingual surfaces of the lower oral teeth, and reinforced by a half-round wire of platinized gold passing across the labial surfaces of the incisors and cuspids. The upper surface of this plate articulated with the upper molars, rendering mastication comfortable. This plate is shown in Fig. 13. The next problem

in the case was to devise some appliance sufficiently powerful to force this conspicuously elongated tooth back again into its place. It was useless to rely on any fixture attached to the molars; they were even too short to support any appliance controlled by an occipital bandage. An occipital bandage attached to the tooth alone seemed to me crude and ungovernable, and likely to result in injury to the tooth by displacement or irregularity and lack of delicacy in its action. Dr. Herbst's method of securing an implanted tooth by a strip of rubber dam covering the crown of the tooth in

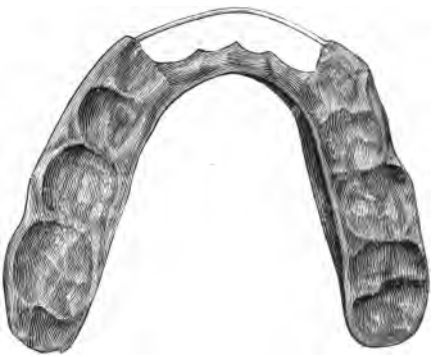
Fig. 12.



question, perforated and slipped over the adjoining teeth and tied to their cervices, occurred to me; but these incisors had no cervices and were too short to afford any such fastening. In this dilemma I concluded to make gold caps fitting the three unbroken incisors, and cement them fast to the teeth, having first connected the three caps by gold wires passing across in front and back of the mended tooth, leaving an intervening space around it. Upon each of these wires were soldered three little gold buttons, as shown in Fig. 14. Here I wish to describe a ready method of making such fixtures. Having taking an impression of the teeth in modeling composition, and hardened it in cold water, it was dried, and that part repre-

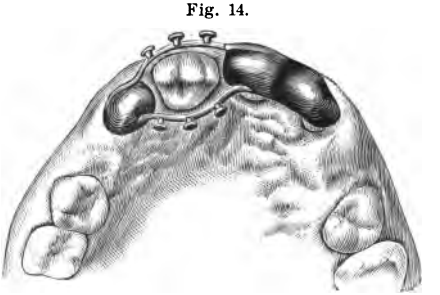
senting the four incisors and the surrounding gum was filled with good, quick-setting amalgam, with sufficient edge strength, mixed rather soft, and packed tightly into the impression. After the amalgam had hardened, the composition was removed with hot

Fig. 13.



water, leaving a perfect fac simile of the teeth in metal. This amalgam cast was mounted for convenience on a block of the composition, or a standard may be made of plaster. Upon this metal die thin gold plate of high grade was shaped with burnishers to fit the parts of the teeth which the caps were to cover. The seams were afterward soldered, and the connecting wires also soldered fast. This convenient method opens a novel use for amalgam; for

Fig. 14.



economy the same amalgam might be used repeatedly. I have also made casts for similar purposes, of zinc phosphate cement, mixed thickly and packed into an impression slightly oiled. When the gold fixture was ready, rubber-dam was applied to the incisors, the surfaces of enamel and gold thoroughly cleansed with alcohol, and the caps attached to the teeth with Justi's insoluble cement, being

held firmly in position by hand for three-quarters of an hour. It was to be a severe test of the virtues of cement, and no half measures would do. After allowing a few hours for the cement to harden, the patient returned, and a strap of elastic rubber was made with three small holes punched in each end. These holes were slipped over the buttons at the front and back of the tooth, so that the elasticity of the rubber might force the tooth into place. The stretching of the rubber at the button holes, however, made the appliance unsatisfactory, and several modifications resulted finally in the powerful combination of rubber strap and screw shown in Fig. 15. At one end of the rubber strap are three gold rings, to pass over the three buttons at the lingual surface of the tooth. At the other end of the strap is a single ring to pass over one of the buttons at the labial surface of the tooth. To this ring is soldered a screw, passing through a gold tube soldered at right angles to a flat bar, which is sewed fast to the rubber. By means of a nut turned upon the screw with a watch key, the pressure of the elastic strap could be adjusted to the most minute degree. By passing the ring at the end of the screw over the right, left or middle button at the front, the tooth might be pressed straight up, or directed to the right or left.

Fig. 15.

It may be thought that a screw alone would have been a better motive power, but a screw firmly attached at both ends, inelastic and inexorable, would have doubtless soon broken the brittle cement and torn the appliance from the teeth. By this combination, however, pressure could be regulated at will, made powerful but not unyielding, continuous or intermitting, as required.

Fig. 16.

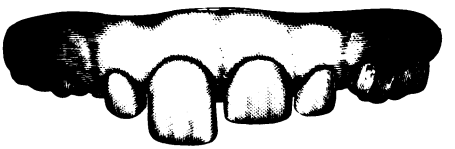
The strap could be readily removed for cleansing and replaced in a moment, and by means of the key the nut could be turned as directed at the patient's home. The operation of this appliance is shown in Fig. 16.

On the 12th of May pressure was begun, but in the twenty-four hours between the release of the tooth from the splint and the first application of force, a perceptible, spontaneous retraction into the alveolus took place, caused doubtless by the elasticity of the pericementum.

The action of the band and screw was perfect, pushing the tooth gently but powerfully upward. The nut was not turned uniformly each day, but was so regulated as to give the strongest pressure compatible with entire absence of pain, alternating with complete rest. As the root entered more and more deeply into the alveolus, the thickening and eversion of the border of the gum disappeared. The festoon of gum which had been dragged down returned almost to its normal shape, and whatever irritation had been present subsided. Now arose an interesting and delicate problem. The patient was not yet eleven years old, and the unbroken central incisor not yet fully erupted. If the mended tooth were now pressed up so as to be of even length with its mate, the left central, how would it be when that tooth should attain its full growth? Would the pulpless tooth also grow and keep pace with its fellow, or would it remain where placed, and a constantly increasing deformity—central incisors of unequal length—be the ultimate result? On the other hand, if it were now left longer than its companion, would there not be risk of injury from accident or use? At this juncture I examined the incisors of both parents, and deciding what would be the probable length of the unbroken central incisor when fully grown, determined thus of what length to leave the mended tooth, assuming that it had lost the power of growth, and would remain where placed. It may be thought that the cervical edge of the enamel might have been discovered before the tooth was pressed back into the alveolus, and that the future length of the tooth might have been determined thereby. This guide was sought, but no sharp line of demarkation between enamel and cementum could be found. When, therefore, the mended tooth was so far pressed into place that its length equaled the supposed future length of its mate, pressure was discontinued. This was on the 4th of June, twenty-three days after the beginning of the return movement. This movement had been absolutely painless. Four day's rest was given the tooth, and the gold fixture was then removed. This was attended with considerable difficulty,

and so well did the system of caps adhere that it was only after cutting them apart with file and drill that they could be separately removed. The four incisors then appeared as shown in Fig. 17. The tooth was now firm enough to admit of the following manipulation. In order to strengthen the fastening of the broken crown,

Fig. 17.

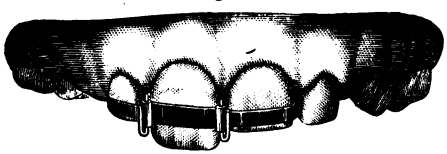


a piece of screw-cut gold wire, like that used for the retention of fillings, was inserted through the sulcus on the lingual surface and into the root, in all, a distance of more than a quarter of an inch, in such a direction that this screw and the gold post in the root would converge. The hole was drilled and tapped to fit the screw closely, the surplus wire cut off, ground down to the enamel, and the end covered with cement, to be replaced with a gold filling. This screw, as well as the post, is shown in Fig. 18. A gold collar might have done as well as the screw, but it would have disfigured the tooth, if in sight, and if pushed up under the gum would have broken up its union with the root. A temporary splint was now placed upon the four incisors to protect the mended tooth from violence, and a new problem was presented, namely: the construction of some device which would steady the toothfor a time without retarding the growth of the contiguous teeth. For this purpose a narrow band of gold was made to fit the mended tooth a little way from the cutting edge, and on this band, at either side of the tooth and parallel with its axis, was soldered a small gold tube. Similar bands were made for the two adjacent teeth, but in place of tubes a small gold wire was soldered to each of the last-named bands in such position that when one of the wires was passed into each of the tubes the three bands were thereby united in such relation to each other that they

Fig. 18.

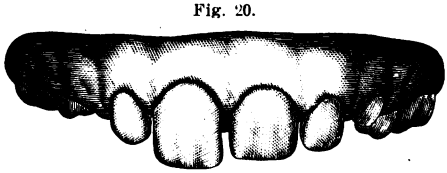
would fit upon the three incisors. The wires were oiled so as to exclude cement from the tubes, and the bands were simultaneously cemented fast upon the teeth. This appliance would hold the mended tooth, and brace it to resist any unusual force; for a sufficient time it would also hold it up in the alveolus. As the growing incisors on either side increased in length, they would simply draw down the wires in the tubes, but would still give lateral support to the tooth. This retainer is shown in Fig. 19.

Fig. 19.



On the 11th of September these retaining-bands were taken off, the tooth being fixed and immovable, the gum firm and healthy. On the 24th of September the teeth appeared as shown in Fig. 20; the difference in length of the two central incisors being already much less than it was on the 9th of June, when the impression was taken for Fig. 17, and I presume this difference will gradually decrease until it disappears. The color of the crown is perfect; the cervix is a shade darker, either from some retrograde change in the tissues during the long period of treatment, or from the opacity of the cement in the root. There is a little roughness at one end of

Fig. 20.



the joint where the apposition of the parts is not quite perfect, but as a whole the tooth is useful, sightly, and satisfactory.

The treatment of this case was largely upon new ground, requiring invention and experiment, and, hence, necessarily tedious and slow. In such protracted operations for children, if we are considerate for our little patients, and gentle with them, we shall often be rewarded by an exhibition of the sweetness and patience of childhood that will excite our wonder and admiration.

Is it worth while to undertake such difficult and costly operations for the preservation of a single tooth? That question must be considered in each instance. There can be no general rule laid down, because teeth have no fixed and uniform value. For one patient a few dollars at the most would represent the value of a tooth, and such elaborate treatment would be a thankless undertaking. In other cases, as in this, the frail fragment of enamel is far more precious than the purest diamond.

MODELS OF COPPER AMALGAM.

Take impression of root for crowning, or crowns for bridging, either in plaster or modeling compound, fill the depressions with the amalgam, implant wire loops, or build out the amalgam, if the model is to be completed with plaster.

ENAMEL FRONTS RESTORED.

International Dental Journal, April.

Drs. Davenport, Kingsley and Perry, report where the enamel front of incisors were broken away, the reattachment of them with cement, some of them lasting for years.

PLATINUM ROOT BAND.

DR. E. P. BROWN.

Dental Cosmos, November.

It should be made of platinum, No. 30 to 36—very thin—always as thin as it can be got to do the work with. Wrap it around and lap the ends, just as in making a gold band, put a piece of No. 30 to 60 rolled pure gold between the laps, with a little flux, solder the ends, file down and fit on. When properly fitted, mark inside the root-margin, take it off, and with a fine-pointed pair of scissors slit right down to the mark, say ten slits. The band will then bend over like pure gold. The best adaptation is made with the aid of the electric plugger—any other plugger will do—by working around with the cap held in place by an instrument or wood point. Then solder.

TO SOLDER BANDS.

DR. CHUPEIN.

Dental Office and Laboratory, March.

Says to prevent a band springing its joint preparatory soldering, to hold joint in position with tweezers and heat the band red hot, which draws the temper and allows the parts to lie close together for receiving the solder.

SOLDERING CUSPS ON CROWNS.

DR. H. H. JOHNSON.

Southern Dental Journal, December.

In soldering filled cusps to the band, it frequently occurs that the solder will run out of the cusps to the inside of the band. To manage it, before attempting to solder the cusps on, solder a thin piece of pure gold to the band, forming a flat surface, then fill the cusps with solder, file the under surface smooth, borax it and place on the flat surface soldered to band, heat until the solder in the cusps flows.

DAVIS CROWN AND BRIDGE.

DR. W. C. DAVIS.

Items of Interest, December.

For instance, to bridge in the bicuspids. Make the ordinary crowns for the pillars as in any other case, putting them in place, take impression and bite and articulate the models. For the bicuspids to be put in make an ordinary shell crown with cap. Then cut away a portion of the palatine portion of band, cupping it out much as an ordinary rubber plate tooth is shaped. Then over the end of this solder a thin piece of platinized gold, which makes the crown now a completely enclosed box. Select a proper cuspid facing, which is of the proper length to cover the gold and come nearer the grinding surface. Cut out the buccal surface of crown

much as is done with the Schriver crown. When all is properly fitted and articulated, insert the shell (facing out) and solder as in any other case. When completed and ready for the mouth, fill the greater portion of box with cement to make it as light as possible. While the cement is soft the facing can be put in and retained with any substance considered best. When set the bridge is ready for mounting. It can be done with an ordinary alcohol lamp, and only a small investment is necessary.

Fill the box with plaster before investing or it is liable to change shape in soldering.

JOHNSTON CROWN.

DR. A. P. JOHNSTON.

Dental Review, December.

After having fitted a cap, with one or more posts as the case demands, to the root, a saddleback tooth, Fig. 1, is selected, ground and adjusted to place and soldered to cap. Fig. 2. Then it is removed from investment, thoroughly cleaned of articles of marble

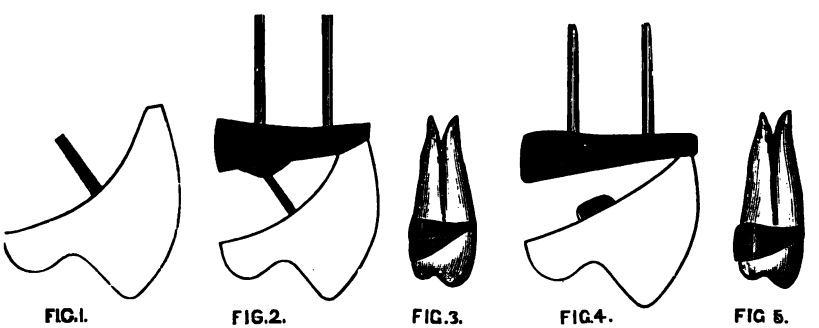


FIG.1. FIG.2. FIG.3. FIG.4. FIG 5.

dust or plaster and an easily fusing body is packed under crown and around the pin, completely filling vacant spaces and contouring to the desired shape and fused. You then have a crown when completed as represented by Fig. 3.

The same crown can be made by backing the saddleback tooth with gold, adjusting and filling the vacant space with gold solder. See Figs. 4 and 5. But it is not quite so neat as when the body is used instead.

If one fits himself up with a Parker furnace (I do not know of a better one, there may be, however), for soldering, he will have but little use for a blowpipe, save a small blowpipe for light soldering, and not only the above described crown but any other crown can be easily made, or any piece of bridge work.

I am living in a small town where the illuminating gas is not used, yet with a gasoline generator, bought of the Buffalo Dental Manufacturing Co., and a Parker furnace I have no trouble in soldering any piece of work. With any care at all there is no danger of cracking the teeth. I have repeatedly heated a crown, soldered and cooled it off in about ten or fifteen minutes without cracking it. With this little furnace there is no use of any more investment than merely to hold the parts together till soldered.

ELLIOTT CROWN.

DR. W. S. ELLIOTT.

Items of Interest, November.

Grind away all bulging portions of crown, shaping it so that a band can be perfectly fitted to the gum margin. Use fine gold, gauge 26. Cut a strip a third wider than the finished crown will be. Make a simple band; secure the joint with 20k. solder. Build up the root or remnant of crown with wax or modeling compound to the required shape, except that the proportions must be thinner and shorter than a proper occlusion calls for. Return the band to the root, supposing it to have been previously fitted, and be careful not to disturb the wax. Mix a little plaster to suitable consistency and fill the projecting end of the band, pressing the plaster against and around the wax. When set, remove the band from the root. If the wax comes with it, melt it out with hot water. We have now an impression of the ideal tooth surrounded by the band. Allow the plaster to dry by holding it over an alcohol flame.

Have at hand an iron ring about one inch in diameter and an inch or more deep. Fill this with prepared molding sand; take the band and bury it in the sand—open end upward—all but about a thirty-second of an inch of the free edge. Mix some whiting with alcohol to a thick creamy consistency, and with a camel's-hair

brush paint the inside of the band and the outside of the exposed edge. Allow it to dry. Over the iron ring stretch a two-inch section of heavy rubber tubing. (These appliances are known as Melotte's, and are sold at the depots.) We have now a completed matrix in which we will cast fusible metal. When cold, lift from the ring, and wash away all sand and plaster. Now we have a metallic tooth surrounded by the band, the cervical end of which is clamped by the metal, so that no change can result through subsequent manipulation. The cusps are formed by slitting the free end of the band in three or four places, and with a suitable mallet folding the sections inward on each other; at the same time the band is contained on the metal die. At this juncture the crown can be easily removed from the die and carried again to the mouth for trial. Before completion, however, a few pieces of 18k. solder with flux should be melted inside of the crown to bind all the folds together. Then the inequalities of the cusps can be finished with file or corundum disks, and the occlusion perfectly adjusted.

WHITE CROWN.

DR. GORDON WHITE.

Southern Dental Journal, November.

Where the band is to be soldered, it is cut obliquely, and allowed to be a little larger at the cutting end. After soldering the band, it is placed upon the root and ground to articulate with the opposing tooth, beveling it toward the palatine side, allowing the buccal side to remain the length you desire the cusp. Then remove it, and with the knuckling pliers crimp the point and make the knuckles as desired; then replace the band upon the root. In the meantime, you can see whether or not it is a good fit. Then place in the band Parr's fluxed wax, directing the patient to close the mouth, which gives the articulating point, or the bite of the opposite tooth. With a syringe throw upon it a stream of ice water. Next, remove the band and wax, and with Evans' wax spatula, trim the feathered edge of the wax next the root, and shape the cusps. With a small ball of wax placed on the palatine side of the inner cusp to form a funnel in the investment, the

case is ready to be invested. This is done by taking equal parts of white sand and pumice stone with an equal part of plaster, being careful to place the buccal side of the band down. The wax is now burned out, leaving a coating of flux. Cut up a lot of twenty-carat solder very fine, rub it on the glass with borax and water, and, with the blow-pipe (without the flame) dry it off. This leaves a little coating of borax on each piece of solder. I have found this absolutely necessary to get a perfect fusion without occasionally burning the twenty-two-carat band. The mold formed by the wax is now filled with this solder. The blow-pipe is applied (be careful to heat well from the bottom) melting the solder, which flows into every part left vacant by the wax. This gives a perfect cast, which only needs to be polished and placed in position. The patient has only to close the mouth and it fits like a "clock wheel." This method applies only to bicuspids and molars. In cases where the root is very short and you need a pin, place the pin in position before inserting the band and wax. I make the combination gold and porcelain crown by the same process. Of all the crowns I have made, and I have made them by every plan, this gives me most satisfaction. It is certainly simpler than former processes, and overcomes the difficulty of getting a correct articulation, a feature in crown work that has given us all much annoyance.

GLASS INLAYS.

DR. JOHN GIRDWOOD.

International Dental Journal, March.

The cavity is prepared without undercuts and lined with a piece of No. 60 gold-foil, which is pressed to place by means of small hard balls of cotton; thus a sharp impression of the cavity is got, but if a sharper one be wished a burnisher may be employed, care being taken to anneal often. This is then carefully removed and the resulting matrix about half filled with the glass powder made into a paste with distilled water. The matrix is then held by one corner with a pair of foil-forceps and the glass carefully dried over an ordinary alcohol lamp and fused; more of the

paste is added and the operation repeated till the cavity is full. After each firing, cracks from shrinkage will be seen in the fused glass, but after the third addition of the paste these will have disappeared. After allowing it to cool, the gold is stripped off and the inlay is ready to set in the tooth. If too full, it can be ground down with fine corundum wheels, followed by Arkansas stones and moose-hide points, with pumice powder and water, which leave the inlay with a fine gloss. I sometimes mix the glass with alcohol instead of distilled water; by its use the powdered glass is less likely to spark when heated.

REMOVABLE BRIDGES, CROWNS AND FACINGS.

DR. EMORY A. BRYANT.

Dental Cosmos, April.

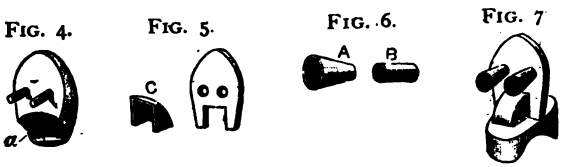
Prepare the root or roots to be crowned the same as for other cap-crowns, cut and fit the band, use pure gold, or twenty-three carat rolled gold plate, about No. 28 gauge, the beveled edge of which should come just under the free margin of the gum, and fit exactly to the contour of the root and as tight as possible. In fitting this band, it should not be driven up under the gum until the tissues are bruised and torn, but just to the margin or edge and marked off with a sharp instrument, as near as possible to the contour of the margin, removed, cut out to the marked line, and then beveled for about a thirty-second of an inch with a file. Replace it on the root and gently drive it up to the edges of the gum, examine all around to see that the beveled edge will go under the free margin evenly, tap it gently until entirely under, mark off on the inside of the band where the top of the root is, remove the band and cut off to the marked line, then place this edge against the side of a smooth corundum wheel on the lathe, and grind this surface perfectly smooth and level. Replace the band upon the root to be sure you have not deranged the shape or contour, remove carefully, and solder on the top a piece of perfectly flat rolled-gold plate, twenty-two carat fine, using twenty-carat solder, and flowing it upon the outside of the band at least a thirty-second of an inch across the bevel of the

flowed solder. (This band can be dispensed with altogether.) Trim the overhanging edges down to the edge of the solder, leaving that to finish up with. (Fig. 1). Place the anchorage post in position in the root-canal, and see that when secured the top will be a little rearward of the center. (Fig. 2). For these posts you can use the posts which I provide for the purpose, (Fig. 3), or the How metal screw-posts and the nuts provided with them. Remove the post and fill the root-canal with gutta-percha, heat the post and push it to its place, smooth off the surplus which has oozed out, put some ink on the top of the post-head, and place the cap down over the root till it touches and leaves a mark. With a punch suitable for the purpose punch the hole (*d*, Fig. 1) to receive the post-head. Place the cap in position on the root, mark off the post-head to the thickness of the nut to be used, remove the cap, and with a corundum wheel in the engine grind the post-head down to the marked

FIG. 1. FIG. 2. FIG. 3

line, trim off the rough parts, and screw on the nut to restore the threads; then remove the nut and place the cap in position on the root. If it is to be a bridge, and more than one abutment is to be used, proceed the same with the other abutments up to this point. We are now ready for the bite, which take in wax, remove the bite carefully and take the impression, in which the bands or caps should be removed if possible. This impression should always be taken in plaster. After removing the impression, if any of the caps have not come away with it, remove them carefully and place them in their positions in the impression. Varnish the impression, oil it, being careful not to get any oil on the caps, and pour the plaster for the model. Remove the model from the impression and set it up on the articulator, place the bite in position and run plaster in the same, connecting with the other half of the articulator. We are now ready to proceed with the making of the abutment crowns. Select the facings to be used from the ordinary veneer facings. For

the backing material I prefer platinum rolled plate, No. 28 gauge. Grind the necks of the facings (Fig. 4) to fit the cap and perfectly smooth, then grind out a recess (a, Fig. 4) large enough to go round the anchorage post nut from the back, being careful not to mar the front or edge of the facing where it touches the cap. Mark on the backing points opposite the facing-pins and punch the holes to receive them, place the facings on the backing, (Fig. 5), the pins extending through the holes, and left straight. Mark the shape of the edges of the facing on the backing, remove the facing, and trim nearly to the mark. For the anterior crowns I use a peculiar cone-shaped platinum cylinder (A, Fig. 6), and for the posterior crowns and the dummies I employ a straight cylinder, (B, Fig. 6), the length of each cylinder being about an eighth of an inch, the small end of the cone and the inside of the straight cylinders being just large enough to slip over the platinum pins of the facings. Place the small end of the cone cylinders into the holes punched for the



facing-pins, extending through the backing about a thirty-second of an inch; adjust them so they are parallel, place on a piece of charcoal or soldering-block, and with a pointed flame directed upon the joint between the backing and the cylinders flow enough twenty-carat solder to make a firm attachment. Care should be taken not to get too much heat upon the backings and the cylinders, or the gold will flow over and close the ends of the cylinders. With a small corundum wheel in the engine grind off the projecting cylinder ends and the solder, punch and cut out of the backing (Fig. 5) over which the platinum box C is to fit, a slot a trifle smaller than the edges of the box to be soldered over it. Proceed the same with the other anterior crowns. Place the facing on the backing, the pins extending into the cylinders; burnish the edges of the backing to the edges of the facing, smooth them over with a file, or corundum wheel in the engine, put the cap in the position it is to occupy, place the platinum box in its position over the anchorage post hole; if the edges of the box do not fit up to the backing and

to the cap, grind the edges till they do, and retain in place with wax cement. Proceed the same with the other anterior crowns. They are now in position to solder. (Fig. 7).

We may suppose the posterior abutments to be molar or bicuspid devitalized roots, the canals enlarged, treated and prepared for the reception of the anchorage posts, the canals filled as explained for the anterior roots, the anchorage posts in their proper positions, and the caps, with holes made for the post-heads, in position upon the roots. The straight cylinders (B) are used for these crowns, soldered to the backings, smoothed down, the facings put on, and the ends are pinched together just beyond the ends of the facing-pins in the cylinder, and cut off close enough to the pins to leave the ends closed perfectly. For the cusps of these crowns and the posterior dummies either use the cusps on sale at the dental depots, or strike up a cusp of the desired shape and size from either pure gold or twenty-three-carat fine rolled-gold plate, flow the cusps full of twenty-carat gold solder, and flush with the edges, trim the edges, and grind the soldered part perfectly smooth and flat on the smooth side of a corundum wheel on the lathe, grind the cutting-edge of the facing and backing to fit the smooth surface of the cusps, and flow some cement wax over the cylinders, backing, and cusps to hold the parts in place.

To articulate the cusps to the antagonizing teeth, remove the facing and grind down to what is nearly right, place the facing on the backing and grind the backing down to the edge of the facing; place in position, and if not short enough, grind off a little at a time till the articulation is correct and the ground edge fits the cap perfectly, the same as for the anterior crowns. Remove the facing and cut out the hole in the backing for the insertion of the anchorage post nuts, reburnish to the facing, place the cusp in its position on the backing and the facing in its proper position, retaining it by cement wax as before. Place in position on the cap, place the platinum box (C) in position covering the holes in the backing, and add cement wax over the whole to the amount and shape you desire the gold backing. The cylinders may project above the box the same as for the anterior crowns, or into the box in case of a short bite.

In making the dummies, the backings for the facings, the cusp, and the preparation of the cylinders are proceeded with the

same as described for the posterior crown abutment, with the exception that there are no caps or boxes to fit. The backing is fitted to the facings, holes punched for the cylinders, (B), the latter soldered to the backing, trimmed up, the ends of the cylinders closed, the cusp fitted in position, and all cemented together with wax.

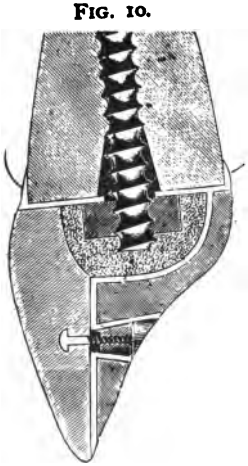
We now proceed to solder the parts. Remove the abutment crowns from the model, remove the facings from both the crowns and the dummies, mix thinly some pumice and water, and fill the holes and the box covering them, of the crowns, and all over the backings and up to the overlapping cusps of the dummies and posterior crowns, being careful that it goes to all the joints and coves in every part, to be sure that no surplus solder will run over these parts. Mix the investing material, (I prefer equal parts of pumice and plaster), invest the crowns and dummies, dry the investments, and heat out the wax. Flow eighteen-carat gold solder into the spaces formerly occupied by the wax, to the shape and amount desired. Plunge the investment into cold water, clean off the remaining investing material, and shape up the crowns and dummies with a small corundum wheel in the engine, smooth with sandpaper disks, and polish with pumice and water on the lathe. The finer you finish at this point the more artistic will be the finished work.

Now for the final soldering and fitting. Place the abutment crowns in position on the roots, screw the anchorage post nuts tight to their place, replace the facings, take the bite with wax as before, remove the facings, unscrew the anchorage post nuts, being careful not to displace the caps, replace the facings and take an impression of the whole in plaster, allowing it to set till it has a firm hold on all the crowns. Remove with the crowns inclosed, and run the model and bite and place on the articulator, as before explained. When ready, place the facings on the dummies, articulate to the antagonizing teeth, wax the dummies in position, withdraw the facings from all the dummies and abutment crowns, invest, heat out the wax, and proceed to solder the whole together with eighteen-carat gold solder. Plunge into cold water, clean up, and after removing all the rough places with the corundum wheel in the engine, remove the scratches with sand-paper disks, polish with pumice and water, using a felt wheel on the lathe, and put on the high or finishing polish with felt wheel and jeweler's rouge.

We are now ready for the final setting of the work. Serrate the pins of the dummy facings with a thin mounted disk in the engine, mix some cement thin, place it over the pins, back of the facings and the edge which butts against the overlapping cusp, and push them home. When the cement hardens, remove the surplus. If anterior dummies are used, place thin cement over the backs of the facings, and screw them home with the nuts provided for the purpose. All facings are now in place but those of the abutment crowns. Dry the roots to be covered by the abutment crowns, place some thinly mixed cement round the inside of the caps, and push the denture to place; before the cement hardens, place the anchorage post nuts in position and screw them to place. Pack the remaining space in the platinum boxes with gutta-percha till full and flush with the backing. With a screw tap made for the purpose, cut the screw threads upon the abutment facing pins, (Fig. 9), place some thinly mixed cement over the backs of the facings, but not on the pins, push to place and screw home with the nuts made for the purpose. These nuts should have the same taper as the cone cylinders. Fig. 10 shows, in magnified section, this form of the attachment, employing a How screw-post and nut.

FIG. 9.

FIG. 10.



To remove the bridge, unscrew the facing-pin nuts of the anterior abutment crowns, loosen the posterior abutment crown facing with a sharp-pointed instrument, and remove the facing; remove the gutta-percha filling in the platinum box, unscrew the anchorage pin nuts, and with a little motion the bridge will come loose and can be lifted off. The anchorage-posts can be removed by applying heated pincers to the pins till the gutta-percha is softened. This gives you direct access to the root-canals for re-treatment. In case you use an all-gold crown for the posterior abutment, and wish to have a removable bridge, I provide a platinum cylinder, screw-threaded inside, with a pin to fit; cut the cylinder in two diagonally at the center, solder one

part to the gold crown, the other to the dummy next the abutment crown and right above the other cylinder. When the bridge is in place, screw in the pin and it gives a perfectly solid attachment. This attachment allows using roots which are not parallel for abutments for bridges.

This system can be used with any other method of attaching the facings of the dummies, but the anterior abutment crowns, and the posterior when roots are used, must be by the cylinder method, in order to reach the internal attachments in the platinum boxes. Although this method may appear intricate and lengthy, yet with the cylinders, nuts, pins, and tap at hand it is no more trouble than any of the methods now in use.

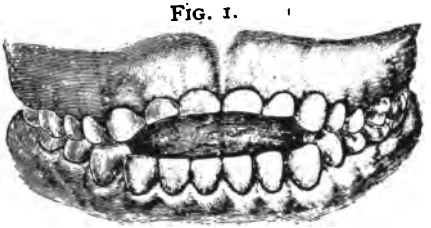
PORCELAIN DENTAL ART.

DR. W. A. CAPON.

Dental Cosmos, April.

Miss C., aged twenty-two, had suffered from gradual loss of tooth-structure, resulting in the condition shown in Fig. 1.

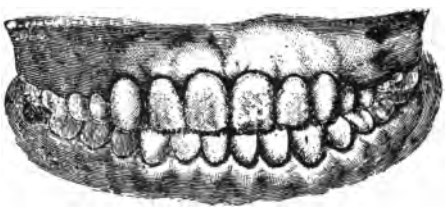
FIG. 1.



Biting and masticating were difficult, and often painful, from the close proximity of the pulp to the surface. To overcome this, one of the many devices as suggested by Dr. C. H. Land, called the "jacket" crown, was employed, and made as follows: After reducing the teeth with engine corundum wheel as much as possible, without producing pain, a tube of platinum, gauge 32, was closely fitted to the necks of the teeth, then soldered as in ordinary band-work. The palatine portion was then ground flat or slightly concave, and another piece of platinum soldered to it to give a natural palatine contour. The labial surface was then ground in a similar manner, which reduced the tube to a wedge shape. After

fitting and burnishing closely to the teeth, a thin porcelain veneer was placed in position by adding porcelain body and baking in a small gas furnace. The crown was once more put in place and occlusion noted, more body being added where indicated. After baking from five to seven minutes, it was ready for attachment by cement, as in other crown-work. When finished, it presented the appearance shown in Fig. 2.

FIG. 2.



Thus six superior oral teeth with live pulps were incased in a durable and artistic manner, the operation causing no pain nor inconvenience. For anchorage we have the natural teeth themselves, with the great advantage of easy entrance should pulp-trouble occur. The palatine surface being platinum, offers a means of easy and quick access. This jacket crown has been used in every portion of the mouth successfully, in every respect, but is especially indicated for "peg" or "rice" teeth, pitted or "measley" teeth, or any other disfiguring deformity, especially when attended by sensitiveness; also in cases of darkened and devitalized teeth.

FERRULING OR CAPPING TEETH.

DR. A. F. TOWNSEND.

International Dental Journal, December.

The surface of the tooth is ground smooth; a gold band high enough for the proper articulation is made; two or more small holes are drilled in the end of tooth; the enamel is slightly beveled; number four gold foil folded several times is pressed on the root; the band is pressed on over the foil; gold pins puncturing the foil enter the holes; the whole is held in place and the band filled with wax; all is removed, invested, and the band filled with solder. It is set with cement.

ORTHODONTIA.

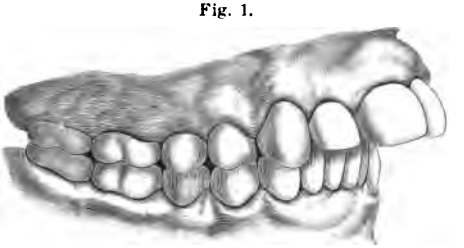
VULCANITE AND PIANO-WIRE REGULATOR.

DR. THEODORE A. WADSWORTH.

Dental Cosmos, January.

To gain sufficient space to allow the front teeth to be moved backward, the superior first bicuspids were removed. A vulcanite plate was fitted to the roof of the mouth, and well cut away from the lingual surfaces of the front teeth. Piano-wire springs of No.

Fig. 1.

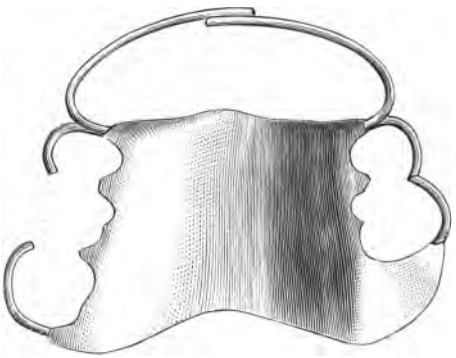


21 were vulcanized into the plate, passing through the spaces made by the removal of the teeth, and following around from each side of the labial surfaces of the cuspids and incisors were made to pass each other at the median line. These springs were bent to give the required pressure on the teeth to be moved, and the pressure controlled by bending the springs from time to time as the teeth were moved inward. The appliance was held in position by clasps made of No. 20 piano-wire fitting the bicuspids and molars. (Fig. 2.) It was worn continuously for four months and could easily be removed for cleansing and replaced by the patient, and caused no pain or inconvenience whatever. The patient was seen once or twice a week, to change the pressure as required.

For retaining the teeth in position an appliance was made by fitting gold collars around the second bicuspids, to which was soldered a narrow half-round gold wire, extending around the labial surfaces of the front teeth. The collars were cemented to the bicuspids with oxyphosphate. Also there was soldered to the labial

surface of each gold collar a platino-iridium wire extending backward and clasping the molars adjoining, for the purpose of resisting any tendency that might exist in the newly regulated teeth to move outward, carrying with them the bicuspids to which the retaining appliance was attached.

Fig. 5.



The entire six front teeth were moved at one time. Also the V-shaped arch was rounded and brought to a proper shape, and the spaces made by the extraction of the teeth nearly closed.

FORCIBLE PROTRUSION OF PARTIALLY ERUPTED TEETH.

DR. EDWARD H. ANGLE.

Dental Cosmos, September.

The partial or complete failure of a tooth to erupt frequently necessitates the employment of a corrective appliance. In dental literature a number of appliances are put on record as accomplishing the forcible protrusion of teeth, the power being derived from screws, springs, or ligatures. All of these devices are similar, in that they are anchored by means of plates, "cribs," or clasps attached to the same arch which contains the malposed teeth; while the appliance here shown derives its anchorage by being attached to teeth in the opposite jaw, all plates, "cribs," springs, etc., being discarded, thereby rendering the appliance simpler, more compact

and cleanly, besides making it far more agreeable to the patient, without in any degree lessening its efficiency.

Fig. 1 shows the principle of this device as applied in the treatment of a very common form of irregularity, in which the temporary cuspid had been retained too long, causing the permanent cuspid to erupt forward of and above its proper place. In this instance the temporary cuspid was extracted and the lower second bicuspid was encircled by a clamp-band, to which had been soldered a short pin with smooth, round head. (See Fig. 2.)

A very small hole was drilled into the cuspid and a short pin was set with thin cement. A common pin answers the purpose very well, and the hole need not be any deeper than the enamel, if the pin is accurately fitted to it. A rubber ligature was given the patient, with instructions to slip it over the pins, as shown in the engraving, Fig. 1. The ligature tends to keep the teeth in occlu-

Fig. 1.

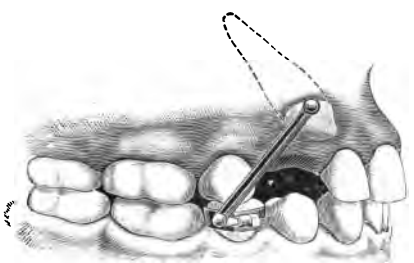


Fig. 2.

sion. The anchor-tooth is directly opposed by the superior bicuspid, and supported by the inferior first molar and first bicuspid. It will thus be seen that this anchorage is the simplest and most efficient possible to obtain.

The ligature should be worn at night-time only, so as not to interfere with speech and mastication, although some patients wear it more or less continuously.

A too strong ligature should not be worn, as it might endanger the life of the pulp, but gentle traction should be used, gradually directing the tooth downward into its proper position.

This simple appliance will be worn without complaint by the patient as long as it shall be found necessary.

I prefer cutting the ligature from heavy rubber-dam, as suggested by Dr. Black several years ago; first punching a hole with

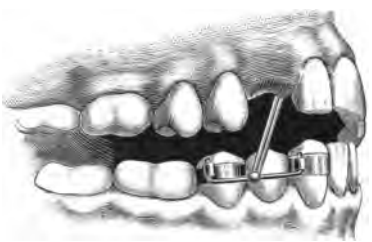
the largest size of the rubber-dam punch, and afterward cutting the outside down to the desired strength with scissors; or from thin rubber bands, such as are used for holding packages of paper together.

The direction of the force to be exerted upon the tooth to be moved will, of course, indicate which tooth in the inferior arch should be selected for anchorage, and also determine the point on the band to which the anchor pin is to be soldered. Should the anchorage fall upon a tooth with no antagonist, there would, of course, be danger of loosening it.

Fig. 3 shows such a case, in which the anchorage was modified to suit the condition found.

The case was that of a young lady seventeen years of age. The deciduous cuspid had been retained too long, causing the permanent cuspid to become imbedded in the alveolar process on the lin-

Fig. 3.



gual side of the lateral incisor, thus necessitating complex movements of the tooth—backward, outward, and downward—requiring a very firm anchorage, which was gained by encircling the inferior cuspid and second bicuspid with bands, having delicate tubes attached to their labial surfaces. A piece of gold wire of the proper length was provided, the ends of which were bent at right angles and slipped through the tubes upon the anchor teeth, as shown in the engraving, (Fig. 3). The wire fitted the bores of the tubes so accurately that in cutting off the ends which emerged through them, each end spread sufficiently to prevent its coming out. A pin was soldered to the wire about midway between the pipes and one cemented in the cuspid cusp, as in the case first described. When the ligature was stretched from pin to pin, as seen in the engraving, the anchorage teeth, two in each jaw, were thus made to oppose the cuspid to be moved.

Fig. 4 shows another modification of the latter method of anchorage. The anchor wire was made detachable, and the pin dispensed with, the patient slipping the wire through the ligature and into the pipes upon retiring, and removing it during the day,

Fig. 4.

as the ends of the wire had not been spread. A delicate band, bearing a pin on its labial surface, was cemented to the tooth to be moved.

Another very useful purpose for which these anchor-wire bands and pipes may be used, as shown in the engraving, is as a splint for supporting teeth that have been loosened by salivary calculus or have been transplanted, replanted or implanted. The teeth to be fastened should be bound or ligated to the splint.

Fig. 5.

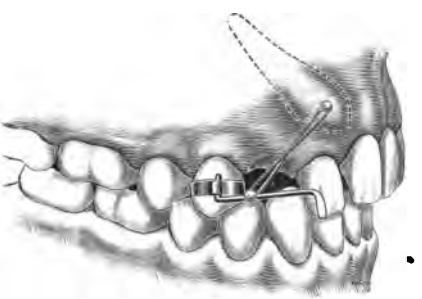


Fig. 5 shows a case in which the appliance used was very similar to those before described, but this anchorage was attached to the teeth in the same arch in which was located the malposed tooth.

The appliance in detail is as follows: The first bicuspid was banded and a pipe soldered to the labial surface of the band, in which was hooked the piece of the gold wire, the other end being

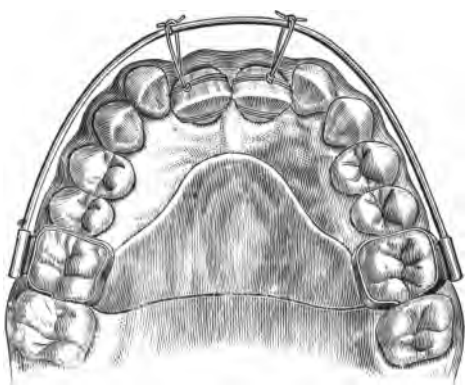
bent so as to rest on the cutting-edge of the lateral incisor. A pin was soldered to this wire, as in the case before described, and a delicate ligature was then stretched from pin to pin, thus exerting a gentle but constant traction. With this appliance the ligature is worn continuously. In some cases where much force was necessary I used advantageously the combined anchorage herein described. The delicate ligatures shown in the appliance last described were used in the daytime, to assist the action of and constantly retain what had been gained by the more powerful anchorage on the lower teeth acting during the night.

NEW REGULATING DEVICE.

DR. EDWARD C. KIRK.

Dental Cosmos, October.

A broad clasp of platinized gold is thrown around each of the first molars, the opening of the clasp being at the distal buccal angle of the tooth or on its distal approximal surface. These clasps are yoked together by a narrow silver plate simply to give solidity to the fixture and cause the two molars to act as a single abutment. Upon the buccal aspects of each molar clasp is soldered a section of



gold tubing about three-eighths of an inch in length; the tubing used is the hinge-tubing of watch-case makers. The distal end of each tube is closed with a drop of gold solder. When the appliance is thus far completed, it is placed upon the model and a section

of piano wire bent to conform to the arch, impinging upon the buccal aspect of the teeth about the middle of their crowns. The length of the piano-wire spring and the relation of its curvature to the labial aspects of the incisors is made such that its form will be that which the arch of the anterior teeth are to take and permanently retain, or, in other words, the wire is to be bent to the form of the arch which it is desired the teeth shall form when the correction is completed.

The wire will now have approximately a U shape. The free extremities of the wire are to be cut to the proper length, so that when introduced into the tube-sockets with the fixture in position in the mouth the arch of the U will stand nearly one-quarter of an inch anterior to the incisors and at about the middle of their crowns. After the fixture is adjusted in the mouth, the teeth to be moved outward are to be firmly ligated to the piano wire by means of fine gilling-twine or silk. The especial advantages of this fixture are that it is cleanly and easily removable for readjustment or cleansing. The traction force is exerted directly outward in the median line, or if desired its direction may be modified by tying the ligature to the wire on either side of the tooth to be moved. The amount of force exerted is absolutely under control, and may be modified at any time by changing the length of the legs of the U-shaped wire, or by using a wire of smaller diameter, or by the method of tying the ligature to the wire.

Not the least important advantage of the appliance as described is, that by having proper regard for the curve of the spring and length of its sides in relation to the curvature of the corrected arch, the fixture becomes practically automatic from the fact that the limit of resilience of the spring is reached at the moment the irregularity is corrected. Consequently, when the work of correction is done the spring ceases to act. I have found much satisfaction in the use of electro-gilded piano wire, not only in the cases described, but wherever I have occasion to use piano wire in regulating teeth. The deposit of gold is amply sufficient to protect the wire from oxidation during a reasonable time while in use in the mouth, and the unsightly staining of the teeth by iron salts is thus avoided. The gold surface is also an advantage when it becomes necessary to unite lugs, loops, or other fixtures to it by means of solder.

REGULATING APPLIANCE.

DR. EDWARD H. ANGLE.

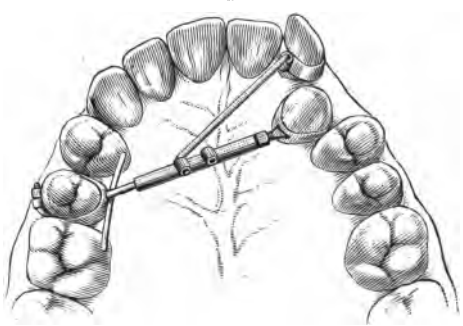
Items of Interest, August.

The case described represents quite a common class of irregularity. The cuspid had been forced to take an inlocked position by the too late retention of the deciduous cuspid, and the lateral had been forced forward and outward.

The appliance here shows Fig. 1 was designed for the purpose of acting on both malposed teeth at the same time, and by reciprocal anchorage force them both into the proper positions with the same power.

In the treatment of this case the cuspid was accurately banded, and on the lingual surface of the band a slot was cut, into which

Fig. 1.



was placed the chisel end of one of Angle's Jack Screws, the other end of which was supported and kept in proper position by the base of the sheath of the jack screw being slipped over a spur soldered to a clamp band and encircling the second bicuspid on the opposite side of the arch.

This tooth was also reinforced by a piece of wire, soldered to the band at right-angles to the axis of the tooth, the ends resting on the lingual surfaces of the adjoining teeth.

The anchorage was also further reinforced by a piece of the gold wire G, from set No. 1, being bent at right angles at one end and slipped into one of the small pipes, which had been soldered to the lingual surface of a band encircling the lateral incisor. The other end was hooked into one of the two small pipes which had

been soldered to the sheath of the jack screw, as shown in the engraving.

The second pipe was added for the purpose of still further reinforcing the anchorage with the bicuspid, should it be found necessary.

It will be noticed that the base of the sheath on the jack screw lacks about one-eighth of an inch of resting against the second bicuspid.

The importance of this is obvious, for by tightening the nut of the jack screw, the sheath is pushed downward over the spur which supports the base, carrying the lateral with it to its proper place in the arch, when the base of the screw finally rests against the second bicuspid, or the principal anchor tooth. The combined resistance of the molar, bicuspid and lateral is expended in forcing out the cuspid.

After both teeth are in proper position they may be retained by the same bands which are soldered together at the point of contact, and again cemented in position on the teeth.

Or another way, more simple and quite as effectual if carefully performed, is to slip a piece of the gold wire through a small pipe, soldered to the labial surface of the cuspid band, allowing the ends of the wire to rest firmly against the labial surfaces of the lateral and first bicuspid. This pipe should be attached in the beginning of the operation, thus anticipating retention.

HINTS FOR TAKING IMPRESSIONS FOR REGULATING.

DR. V. H. JACKSON.

Ohio Journal Dental Science, November.

Impressions are best taken in modeling compound, the hardening hastened by applying small napkins, wet in ice water. Use pulverized soapstone to prevent dragging when the teeth are long. Fill all irregular spaces and undercuts with wax previous to taking the impression. If a tooth is inclined so much as to prevent easy withdrawal of the impression, with a string tie soft compound around the tooth, so as to secure such an incline as will allow of

easy withdrawal of the impression. Before taking the impression, lay over this compound two or three pieces of wet, thin paper, to keep the warm compound from adhering to the tooth and its bushing of compound. After removing the impression the compound may be removed from around the tooth and dropped into its proper place in the impression.

CORRECTING AN UNDER-BITE.

DR. J. A. OSMUN

Dental Cosmos, December.

Where the lower front teeth bite too high on the palatine surfaces of the upper teeth, thereby throwing the upper out, to crown or cap one or two molars on each side, will allow the other teeth to elongate and bring about a better occlusion. Then remove the caps on crowns.

METHODS OF REGULATING TEETH.

DR. V. H. JACKSON.

Dental Cosmos, December.

It is the opinion of the writer that each tooth should be encouraged to take a correct position in the circle of the arch while erupting, (or as soon thereafter as practicable), in order to promote the proper development of the jaw, for the teeth next to be erupted are thus more likely to do so in proper position and order. Only a portion of the alveolar process that forms the sockets for the roots of the teeth is developed until the teeth are fully erupted. For this reason a slight pressure will change their position.

When convinced of the advisability of regulating teeth for young patients, several devices have been adopted with partial satisfaction, but none as yet have met all the requirements so perfectly as the "crib," which is equally applicable to patients of every age.

Impressions taken of irregular teeth for the purpose of making appliances are usually more satisfactory when taken with some of

the modeling compounds, as the surface of the model will be much smoother than when taken in plaster, and the compound is more agreeable to the patient. It should be hardened as quickly as possible by the application of small napkins about two inches square, folded and moistened in ice-water. The impression cup should be well shaped to the arch.

If the teeth are long and there is danger of the compound dragging while being removed, a quantity of pulverized soapstone should be sifted over the surface before inserting. If there are undercuts between or cavities in the teeth that are of such shape as to cause the compound to drag while removing, they should be carefully filled with wax or other material. If the second or third molar is inclined forward into the space formerly occupied by the first molar to such an extent as to prevent getting a perfect impression, it can be overcome by either placing a rounded piece of soft compound longitudinally between it and the tooth next in front, and allowing it to harden in such shape that there will be no undercuts, or by shaping a small piece to the gum and mesial surface of the inclining tooth to which it may be ligated. When well shaped and sufficiently hard, it should be covered with one or two layers of thin moist paper, and the impression taken either in plaster or modeling compound. The parts are then removed and placed together. If the operation is well performed, a perfect impression is the result. Water injected from a syringe under the lip when removing the impression will relieve the tendency to suction, and thus avoid the danger of drawing the compound up in the center, which so often spoils the impression. Forcing water under the lip with the syringe when removing plaster impressions is found to be invaluable, as it furnishes the moisture demanded by the hardening plaster and causes it to separate from the mucous membrane.

In taking an impression of a model to make a duplicate, dry heat is preferred for softening the compound. The model and compound should be well covered with soapstone as before described.

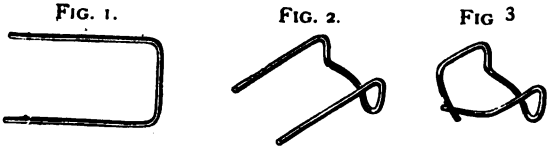
The models are to be prepared by carving the plaster well away from the gum portion at the necks of teeth that are selected for anchorage, choosing usually the temporary molars, bicuspids, or permanent molars.

A piece of any metal suited to the purpose, and shaped like a

partial clasp, is formed to either or both the lingual or labial surface of the teeth to be used as anchors, usually arranging the metal on the lingual side only, and choosing either very thin gold, block tin, rolled copper tinned, German silver, or tagger's tin. The latter works most easily, but is apt to corrode, and should be often polished. After the metal is cut to proper form, it is contoured, which is an easy task, by using the contouring pliers made by The S. S. White Dental Manufacturing Co. for contouring gold crowns, with which pliers the metal may be hollowed to fit the contour of the tooth; it should be pressed well up about the neck, and at the same time made to curve over the grinding-surface between the teeth to prevent the appliance from pressing on the gum.

If adjoining teeth are to be used as anchors, the metals are arranged on each, and united at the junction of the teeth. A spring wire, about No. 20 or a little larger, as the case may require, is formed so that it will fit the labial side of the tooth, with both ends passing over the arch at the junction of the adjoining teeth, and

FIG. 1. FIG. 2. FIG 3



curved about the lingual side near the gum line, to rest on the metal described; but should be made to fit loosely so as not to injure the plaster model when removing it. The wire is most easily formed by first bending it at right angles, (Fig. 1), leaving the width between the parallel sides equal to the antero-posterior width of the tooth to be clasped. The part that is to clasp the neck of the tooth is then so curved with clasp-benders that it will be perfectly adapted to the curve of the labial side of the tooth. (Fig. 2). Both wires are then placed in the clasp-bender at proper distance from the curved portion, and bent nearly to a right angle to cause them to pass over the grinding-surface, and again bent in the same manner to extend toward the neck of the tooth on the lingual side. (Fig. 3). The ends are then bent toward each other near the gum line over the metal previously described, as seen at A, in Fig. 4. If the appliance is to be attached to the teeth of the opposite side of the arch, the crib should be constructed in the same manner on

that side. A base wire, which is usually of a larger size, is then formed to the lingual side of the intermediate teeth, with its ends passing over the metal described, on either side of the arch.

The wire is held in position on the model, and is soldered with the clasp spring to the metal described, by laying on them a piece of soft solder or tin sufficiently large to finish the soldering at once. The parts are then fluxed with chloride of zinc, and fused with a hot soldering iron. When using steel spring wire, the chloride of zinc should not be used until the soldering iron is ready for soldering, as it corrodes the steel in a few moments sufficiently to interfere with the union.

The preceding process simplifies the previously published method of making nearly all the crib of one piece of metal, which often proves difficult; this permits it to be made in sections, that

Fig. 4.

are adapted to the different parts of the model perfectly, and are then united while in position, which insures a perfect adaptation if the model has not been injured by handling. An additional spring can be added at any time.

A narrow strip of tinned copper or tagger's tin is used in preference to the binding wire formerly described for winding the joints in uniting springs, etc. The strip is wound about the parts in the same manner as the binding wire, and the solder flows over it more freely. Copper wire gauze and perforated tin have been used to advantage.

If there is insufficient room for the free eruption of the permanent teeth, it is best to begin to expand the arch, if necessary,

when the incisors are erupting, an operation easily accomplished by means of the crib appliances.

Correcting the position of irregular inferior incisors will often correct the position of irregular superior incisors, if undertaken while these are erupting, or soon afterward. If two or more teeth are to be clasped, the width between the parallel wires, as seen in Figs. 1 and 2, should permit them to rest on the distal and mesial coronal sides of the two respectively, with the portion between them conformed to either the labial or lingual sides of the two teeth.

If the metal is formed to the lingual side of the teeth and the wire is also arranged on the same side, the ends should extend over the coronal surfaces to the labial side, and each be formed into an independent clasp to encircle the separate teeth, or the wire can be arranged on the labial side as described, for attaching it to a single tooth.

Dr. W. H. Jackson, of Ann Arbor, Mich., recommends a crib spring wire attached to a plate, and passing over one or more teeth on either side of the arch for retaining obturators, and thus avoiding the ordinary injury to tooth-structure.

The advantage of using the crib appliance for young patients is that it is easily retained, causes no inconvenience, and does not interfere with articulation, even when used in the upper and lower arches at the same time.

The model is not injured in making the appliance, and may be preserved as a record for future measurements and study.

By attaching the appliance to a single tooth on each side of the arch as an anchor, all of the other teeth tend to support it, and thus, in ordinary cases, the same object is gained as when more teeth are used as anchorages.

Where one or two incisors are erupted posterior to the natural position in the line of the arch, with, as is often the case, the first temporary molar, or bicuspid, decayed or absent, an appliance like Fig. 5 will, if the teeth are not too crowded, be sufficient to correct the irregularity. It is made of spring wire, about No. 17 to 20, standard wire gauge.

A loop is first made to pass through the space with one end following the lingual and the other the labial curve of the arch, and extending to or a little beyond the teeth to be moved. The spring

on the labial side is usually made a little longer than the one on the lingual. The appliance is retained by placing a collar with a lug in suitable position on one or more teeth. If the power of the spring is found to be insufficient, a wire of larger size can be substituted, or a silk ligature be looped around each wire near its end, and, by passing between the teeth, cause additional pressure by drawing the springs together.

If all the teeth are erupted, and none are to be extracted, the appliance described can be made efficient by bending the loop at a right angle with the springs, and by suitably shaping it to lie over the arch at the junction of two teeth. This is easily accomplished by placing the loop in a flat-nosed plier or a vise and bending at

Fig. 5.

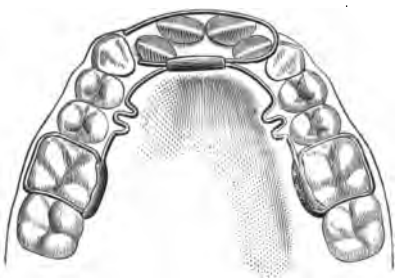
once to the required angle, being careful to have the loop so shaped as not to interfere with the closing of the teeth, and to retain it with gold collars and lugs on the teeth as previously described.

If the arch is much crowded and some of the teeth too prominent or requiring to be rotated while at the same time expanding the arch, an appliance like Fig. 6 will often be required, and, in addition to the appliance described, a base wire should be anchored either to the second temporary molar, second bicuspid, or first permanent molar on each side of the arch, and provided with one or two loops or corrugations, just anterior to the crib attachments. The loop-shaped spring is then united to the base wire by one of the methods previously described. To expand the arch, the loops or corrugations in the base wire are opened slightly from time to

time, and the loop in the spring over the incisors changed to meet the indications.

If the lower incisors are crowded, and especially if they are held back by the position of the superior incisors, and their position is such as to require the whole or part of the arch to be expanded, an appliance like the one shown will, in many cases, meet the

Fig. 6.



requirements. The base wire in this instance is made with a loop in the center just posterior to the central incisors, and anchored to a tooth on either side of the arch as described. A spring is then attached to the base wire just anterior to the crib portion on each side in the usual manner, and extended forward to the lingual sur-

Fig. 7.

face of the teeth to be moved. A collar with a lug is often placed on an incisor or other tooth to steady the spring. The pressure is controlled by opening the loop and bending the springs outward.

Fig. 7 exemplifies the method employed to force into line a left superior lateral incisor that was far inside of the arch and out

of proper position. At the same time the arch was to be spread to some extent. A crib was formed about the first bicuspid on each side of the arch, and to the crib was soldered a base wire that was shaped to the curve of the lingual surface of the teeth. A spring was then fastened to the base wire near the right bicuspid and extended forward, forming a spring which passed beneath a lug soldered to a collar on the lateral. The same system was employed to move a central incisor out into line, the crib being attached to the temporary molar. In each case the teeth were moved into position in a very limited time.

It often occurs that all of the superior incisors bite over the inferior incisors excepting one (either a central or lateral). If the teeth are not crowded, and there is no necessity for expanding the

Fig. 8.

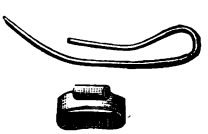
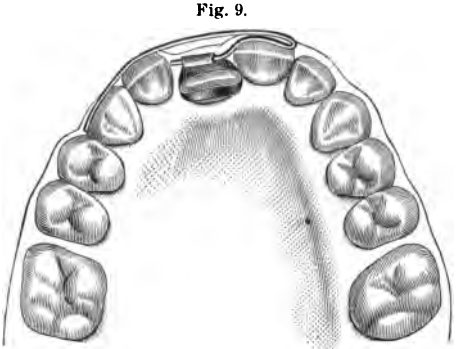


Fig. 9.



arch, a collar having an eyelet or tube soldered to the labial surface can be placed about the tooth that is to be brought forward. A spring wire is then formed into a loop, the ends extending parallel, with one twice as long as the other and curved toward the shorter one, and also curved back sufficiently to follow the labial surface of teeth in the arch. (Fig. 8). The longer spring should at least be long enough to cross the surface of three teeth. The shorter arm is usually applied next to the gum, and is bent slightly outward before being placed in the eyelet or tube.

In adjusting the appliance the longer spring should be next to the gum, while the end of the shorter one is being inserted in the tube; then by turning it downward the whole appliance comes into proper position, with the shorter arm of the loop acting as a spring to draw the incisor outward. (Fig. 9). The spring is removed

easily to put on more pressure, and usually requires no other means of retaining than the tube on the collar.

In Fig. 10 it will be seen that the right superior incisor is too prominent and the left incisor not prominent enough, and is partially rotated. The irregularity was corrected by making a crib with which to clasp the second right superior temporary molar. A spring extended from the crib to the front of the arch, following the labial surface of the teeth near the gum line, and was formed to pass the right incisor and to extend into a tube soldered to a collar placed on the left incisor.

By removing the appliance and slightly straightening the end of the spring, pressure was exerted on the front of the right incisor, forcing it back into line, and acting at the same time as a lever it

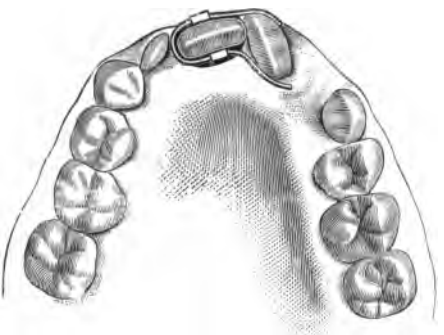
Fig. 10.

drew forward sufficiently to move the left incisor into line, and also to rotate it. The same method has been used with marked success for rotating teeth, making the crib portion either with the partial clasp soldered to the end of the spring, or with the end of the spring formed into a simple crib, to pass over a bicuspid or molar, with the other end of the spring portion extended into a tube or eyelet in the band about the tooth to be rotated, being careful to bend only the end of the spring where it enters the tube, when more pressure is required.

A very simple and effective method for rotating into proper alignment one or more central incisors that are fully or only partially erupted is to place a collar on one or both, with suitable lugs attached to hold a U-shaped spring wire, having one arm extending on the labial side of the teeth, and terminating in a curve so as to

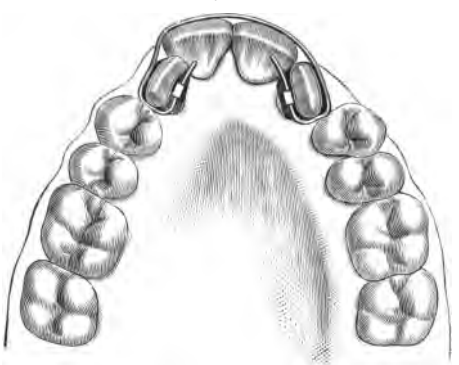
cause pressure on the mesial edge of the left central, and at the same time serve to keep the appliance from slipping laterally. The other arm on the lingual side is curved forward somewhat in the center, and its end left long enough to extend a little beyond the distal side of the left central. (Fig. 11).

Fig. 11.



In the case illustrated the patient was but seven years old, and the temporary laterals were absent. But if the laterals are present the wire should have a loop so formed as to pass over the arch at the junction of the lateral and central incisors as described in Fig. 5.

Fig. 12.



the V shape, or the laterals are somewhat back of the normal line of the arch, and the rest of the teeth in proper position, a spring, as shown in Fig. 12, will usually be sufficient to correct the irregularity. A spring is formed to extend across the labial side of the

If the incisors of the superior or inferior arch are inclined to

incisors to the distal side of the laterals, with its ends forming a loop and passing over the arch to the lingual side, and bent again at a right angle to follow the lingual side of the laterals and extend onto the outer third of each of the central incisors. It is usually retained by placing collars with lugs on the laterals.

It will readily be seen that by removing the spring, straightening the main portion slightly, and replacing it, there will be a pressure backward on the mesial portion of the centrals and a corresponding drawing forward of the laterals to rotate them and the centrals at the same time. Such appliances can be used for rotating the centrals alone in the same manner.

Fig. 13.

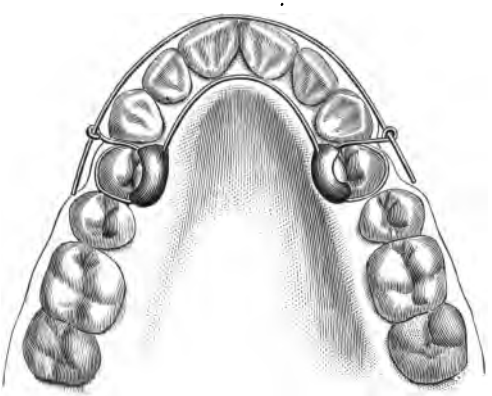


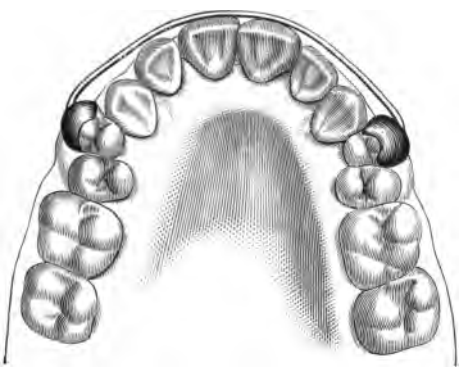
Fig. 13 shows a very convenient method of regulating the V-shaped arch, by forming a base wire (with or without a loop or corrugation), which is shaped to the lingual side of the teeth, and anchored to one or more teeth on either side by a crib, to the labial side of which should be attached a hook or eyelet to sustain a straight bar of spring wire that is sprung over the front of the teeth for the purpose of flattening the shape of the arch. The tendency of the wire to straighten itself exerts a pressure backward on the front teeth, and at the same time assists in spreading the arch.

Since describing in the Dental Cosmos the method of drawing crowded incisors into proper line where a bicuspid had been removed on either side of the arch, a valuable addition has been made which facilitates the work. The foundation spring is made of heavy spring wire following the lingual curve of the arch, and attached

by a crib to the teeth that are to be used as anchors; on the labial side of the teeth are attached two independent springs on either side of the arch, one of which extends forward beyond the median line to act on the incisors; the other, or shorter one, terminates in a curve on the mesial surface of the cuspid, which will so be drawn backward. If only one spring is used on either side, it will often be an advantage to extend the wires beyond the median line sufficiently to press on the cuspid of the opposite side of the arch.

Drawing into line one or more prominent bicuspids or cuspids, whether partially or fully erupted, where partial space remains for them, can often be effected by fitting thin metal to the labial surface of the teeth to be moved, and extending the metal well toward the

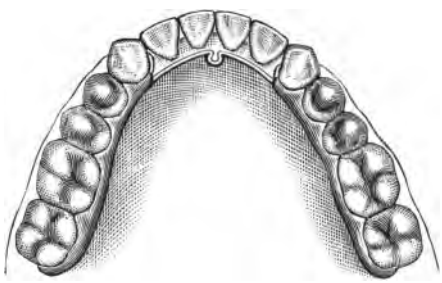
FIG. 14.



necks and distal sides of the teeth. Then shape a good-sized spring wire to follow the outline of the front teeth, and extend that to the metal clasps to which it is soldered. The appliance is removed from time to time, and the clasping ends of the spring bent toward each other to exert the pressure required. (See Fig. 14.) A similar appliance was used for retaining the superior incisors and cuspids, that had been too prominent and were drawn back, the cuspids filling the space formerly occupied by the first bicuspids, which had been removed. In this instance a half-round gold spring wire extended from the labial surface of the front teeth back on either side of the arch and was anchored to the second bicuspid, the crib consisting of the partial clasp on the labial side and the spring wire on the lingual side of each respectively. The bicuspids had not moved forward perceptibly at the end of ten months, and the front teeth were perfectly retained.

It is obvious that an appliance for spreading the lower arch of teeth should not extend below the gum line, as the tissues are tender, and a covering plate is not tolerated without more or less rebellion, especially if the arch is to be expanded to any extent. Indeed, there is no apparent advantage in extending the appliance onto the mucous membrane in any ordinary case, as the alveolar process will follow and surround the teeth in almost any position they are made to assume. An appliance like Fig. 15 may be easily constructed and will meet all requirements. After carving the model and arranging partial clasps of metal on the palatal surfaces of the teeth on either side of the arch, a spring wire with a loop in the center is formed to follow the lingual sides of the teeth in contact with the metals. Tin or solder is then used for soldering, as in the more simple case. The same system is applicable for contracting the arch, the moving force being developed by bending the spring inward or outward as the case may be.

Fig. 15.



The same system has been used successfully for retaining all of the teeth in the arch after regulating, by shaping thin metal to the labial and lingual sides of all of the teeth to be retained, after which a wire is shaped to come in contact with all of these. The two sides are next joined with small wires, passing over the arch as in the simple crib. Tin is then flowed over the spring and metals, joining them all. If the model is perfect and the appliance well constructed, a perfect adaptation is the result.

This retaining device will be of service in cases of simple fracture of the jaw. The metal clasps can be formed to fit a tooth as perfectly as an ordinary clamp. It can be made in sections and fitted to the teeth on either side of the fracture, and the two or

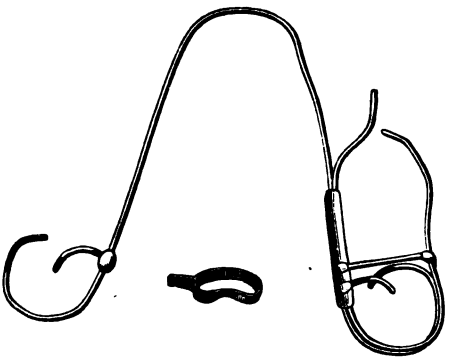
more parts united after their suitable relationship has been found by the proper adjustment of the displaced tissues.

In a certain class of cases the following method has given satisfaction for drawing into line a bicuspid that has erupted inside or outside of the arch. A spring wire is bent in the form of a crib surrounding the irregular tooth and an adjoining one on each side, passing well up next to the gum on the labial and lingual sides, with the ends of the spring wire terminating upon the tooth to be moved and free to cause pressure upon it. Fig. 16 is an example.

The model here presented represents the teeth of a young lady sixteen years of age. Both of the lower first molars have been

Fig. 16.

Fig. 17.



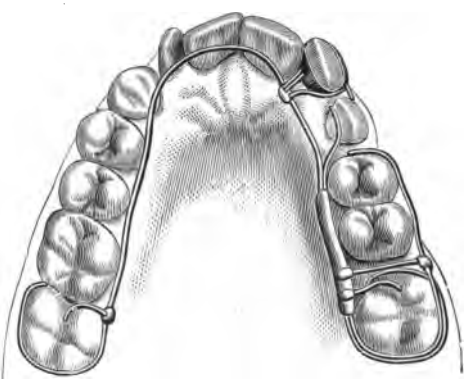
extracted, and the second molars have moved forward and taken their place. The upper front teeth are too prominent, the laterals being rotated outward so that their cutting-edges are across the arch. The crown of the superior left cuspid is about one-third erupted, and is coming inside of the arch, as there is insufficient space for it to erupt in proper line. All of the removed teeth and the superior left first molar had been extracted by a practitioner who inserted a vulcanite plate that covered the roof of the mouth and extended through the space made by the removal of the first molar, to form a clasp around the second molar, from which projected a metal point both on the labial and lingual sides of the tooth, for the attachment of four rubber rings which extended forward and were hooked over gold spurs that projected from a gold collar on the first and second bicuspids for the purpose of drawing

them back to make room for the cuspid and lateral incisor. The appliance was well adjusted, but as the molar was very short it was not well retained.

The patient was referred to the writer, and a crib, made in the following manner, was inserted December 20, 1890.

A base wire was formed of No. 17 spring wire to follow the line of the lingual side of the teeth, its ends formed into clasps which extended nearly around each of the second molars. A long U-shaped spring was then placed on either side of the left second molar and bicuspids, the ends extending in front of the first bicuspid on either side. The two wires were connected in front of the molar by a cross wire, having its ends flattened and curved around the two

Fig. 18.



wires, which were also wound with fine binding wire, and all soldered with soft solder, using a soldering iron.

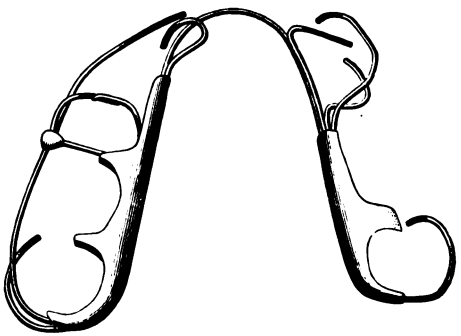
The inner spring end was shaped to press on the partially erupted cuspid to force it outward into place. The outer spring end was given a curve against the mesial side of the first bicuspid, the action of which drew both bicuspids backward. The appliance was anchored to the second molar, and was prevented from moving forward by resting against the lingual side of the incisors. (See Fig. 17.) One result is shown in Fig. 18.

A new appliance was then constructed to retain the teeth that had been moved. It was made with the partial tin clasps, contoured, and united to the base wire with solder as previously described.

Both laterals were to be rotated inward, and, as the teeth were

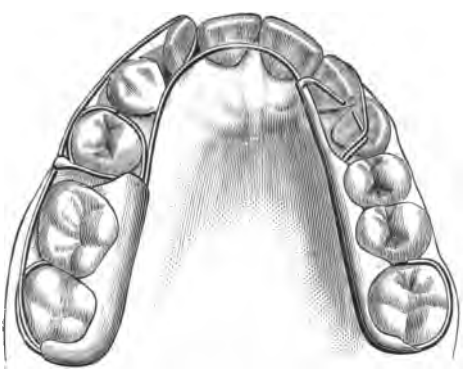
very prominent, the second bicuspid on the right side was extracted, and the first bicuspid and cuspid were moved back by springs as described for moving the bicuspids on the left side. At the same time springs were added to the appliance for rotating the laterals,

Fig. 19.



the principle of which was to attach a spring with a straight portion in contact with the lingual side of the tooth, and a spring attached to the base wire which extended in a curve to the labial side of the tooth. (See Fig. 19.) By gradually changing the angle

Fig. 20.



of the springs, the teeth were rotated into proper position. (See Fig. 20.) The appliance was well retained, and additional springs were added as needed until there were nine in all. A complete retaining appliance was applied May 21, 1891, the space made by the removal of the bicuspid being almost entirely closed, the projecting incisors brought well inward, the arch made symmetrical, and the appearance of the patient remarkably improved.

Respecting this entire crib and spring wire system, special stress is laid on the following facts: (A) The materials—piano wire, tagger's tin, sheet copper, copper wire, tin, and soft solder—are inexpensive, and within the reach of all. (B) The crib and spring construction is simple and quickly done. (C) The clinging grip of the crib on its anchorage is sufficient to hold the fixture firmly, yet it is easily sprung off for cleansing or change. (D) Changes or additions are easily and quickly made. (E) The structure is light, cleanly, and occupies the least possible space in the mouth. (F) Its action is controllable, and free from risk of over-action. (G) It forms a perfect retainer.

Therefore, its general adoption may reasonably be anticipated as soon as these facts shall have become known.

REGULATING PLATES.

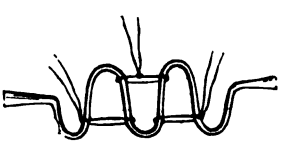
DR. H. LLOYD WILLIAMS.

Dental Record, June.

Many years back Mr. Coffin described a method of expanding the jaw by means of the steel wire, and his method has been adopted and has been called after his name.

A piece of wire (No. 14 has been found most useful) is bent by means of round-nosed and flat pliers to the shape shown in Fig.

Fig. I.



1. The length of the arms will always be regulated to some extent by the depth of the palate; it is known that by lengthening the arms a greater spring is obtained, but at the sacrifice of strength, therefore a moderate length of arm is the more effectual, and the same length approximately is applicable to most of the cases met with. The flattened side arms are for insertion in the wax, and must be so adapted.

When the wire has been bent to the shape indicated, the bows

are brought together with binding wire, (shown in position in the figure), the two ends of the binding wire after twisting are separated widely and left rather long.

The spring is now ready for insertion.

It will be observed that no direction has been given to bend the spring to conform with the shape of the palate, and this should never be done. The best way of inserting the spring undoubtedly is to place it as nearly as possible at right angles to the axis of the arch. The lateral pressure will be truer and more evenly diffused, and the expansion of the springs from time to time will give the operator the minimum of inconvenience.

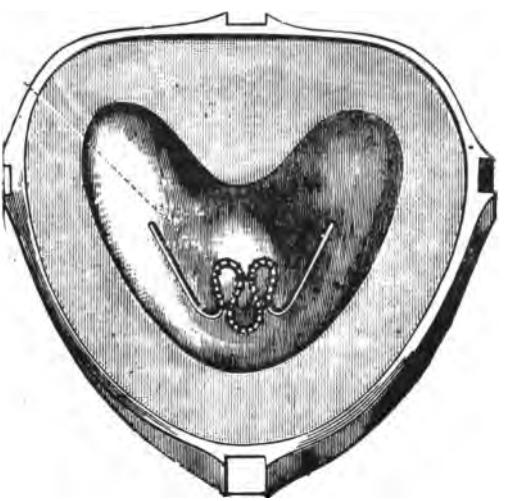


Fig. II.

The position of the spring must be decided on the merits of each individual case; as a broad, general rule, however, it should occupy a position opposite the first bicuspids. The spring standing perpendicularly in that position a large space will be left between it and the palate in front; this is filled with wax to the level of the top of the spring, the wax from the spring to the incisors being made flat and smooth.

No particular trouble need be taken to remove the wax from the spring, which after the previous stage would certainly cover it, so long as it does not project beyond the spring. The cut ends of the binding wire will anchor the spring safely in the reverse. The

piece is now flasked; the flask is heated to soften the wax and then separated. The next step is a most important one, for on it the success of the plate will entirely depend.

The plaster around the spring (Fig. 2 dotted line) is roughened slightly if necessary, and fresh plaster, mixed very thin, is added until the spring is completely covered, the operator while adding the plaster aims at making a flat surface of vulcanite for the spring to play freely upon. The part of the spring to be covered is shown lightly shaded in the figure. Coffin plates always present difficulties in polishing, but by the adoption of this plan those difficulties appear to be diminished. After vulcanizing and finishing, the plate is sawn in two longitudinally.

For drawing back bicuspids and canines, an adaptation of the principle of the Coffin spring has been found to be very useful and applicable to the great majority of the cases which present themselves for treatment.

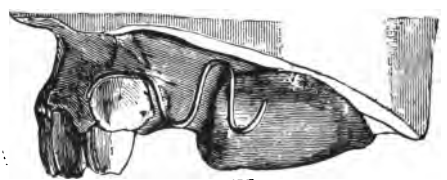


Fig. III.

The spring is turned in precisely the same manner as for a Coffin spring, regard being had to the depth of the sulcus; the spring should not project below the cutting surfaces of the teeth.

Long arms are left on either side of the spring, one for insertion in the wax, and the other to be fitted round the neck of the tooth which is to be moved. It will be found generally convenient to make the straight arm from the spring to the tooth short.

When describing the insertion of the Coffin spring, the spring was directed to be closed by means of binding wire; in this case, however, the spring is left widely open. The power here is produced by approximating the arms of the spring from time to time until they cannot be closed further.

This spring is shown applied to a canine in the drawing, Fig. 3.

A very effective mechanism, by means of which bicuspids can be pushed backwards, as after the extraction of first molars, is made

by bending the wire round one arm of a round-nosed pliers a turn and a half or less according to the exigencies of the case to be treated; the arms of the wire are left long, one is adapted to the side of the tooth to be moved, (Fig. 5), and the other bent and flattened for insertion into the wax. The single coil formed by this wire should be large enough to admit the blade of a flat pliers to open the ring. Pressure is obtained and maintained by opening the ring gradually.

The drawing shows the position in which the wire is most accessible, and that in which most work can be obtained from its use. It is always best to erect a small platform of vulcanite underneath the coil. The same precaution in flasking is necessary, as that described for the flasking of the Coffin spring; the coil must be covered over with plaster and the surface made as smooth as possible.

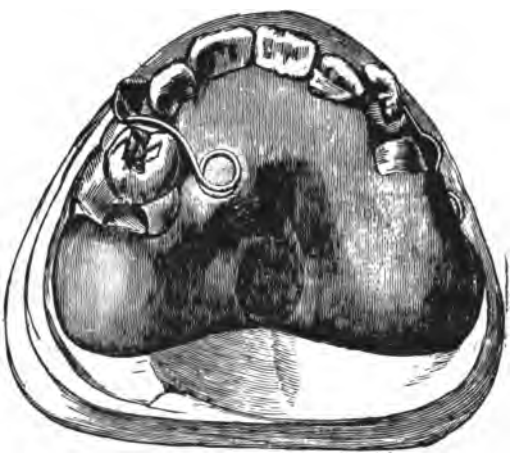


Fig. IV.

The same spring can often be applied with advantage to front teeth, though its utility in this position is variable, as the tendency of the wire is to slip off such teeth as laterals and centrals. Still, in a certain number of cases where the teeth are large and the cingula prominent, the spring may be found expedient.

It is a rule which deserves treasuring—that regulating appliances should perform their allotted tasks without dependence on the immediate help of the patient. The superiority of the wire over hickory pegs, on this account, is great, but not so over compressed

wood wedges. In many cases treated with the spring, it is unnecessary to cover back teeth, this advantage is one which should be grasped whenever otherwise admissible.

Steel wire must always be coated with some metal which is not so readily acted upon by oxygen, sulphur, and moisture. Tinning has been long in favor, and it affords satisfaction. The commonest plan for tinning is that of dipping the wire into molten tin, or to melt tin on a spatula, lightly heat the wire and rub the tin on to it.

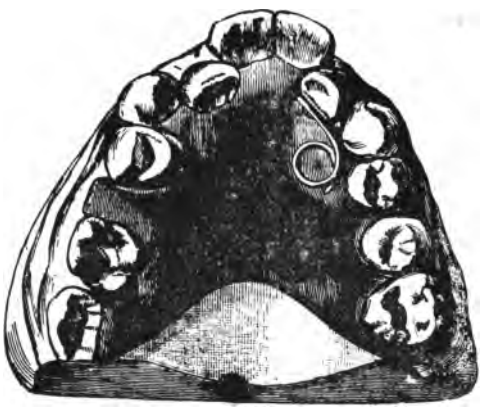


Fig. V.

I had a large coil of wire tin-plated by an expert in electroplating, and it was found that this wire answered the purpose very well; it had the disadvantage of being coated before the manipulation required for adaptation was performed, and obviously this was a drawback; with care, however, it was found that it answered well.

DENTAL MEDICINE.

TINCTURE PHYTOLACCA DECANDRIA.

DR. M. W. SPARROW.

Items of Interest, April.

Has found it very efficient in the treatment of neuralgia, severe odontalgia, especially after a tooth has been filled, and in cases of periostial inflammation. Give it in doses of from five to ten, and sometimes fifteen drops hourly until patient is relieved, which usually occurs after the third or fourth dose; sometimes give it in five-drop doses half hourly. Never give a large dose except in very severe cases; the danger here being that the patient may be made sick. Has treated neuralgia with this remedy with satisfactory results; also several cases of periostial inflammation, with tendency to develop into abscesses, which were counteracted and cured by the use of phytolacca before the point of suppuration was reached. Administer it in a tablespoonful of water.

MORBID GROWTH OF GUMS—A CASE IN PRACTICE.

DR. W. H. JACKSON.

Ohio Journal Dental Science, April.

Miss ———, age 14; complexion, light; eyes, blue; hair, dark brown; stature, medium; lips, much swollen, the lower rolling to the chin, upper nearly reaching the nose, both covered with a thick black scab from angle to angle of the mouth two and a half inches, and from superior border of upper lip to inferior border of lower lip one and one-half inches; mucus constantly streaming from the mouth. Being unable to expectorate it required constant wiping, and it was so ropey that she had to make a ball of her

handkerchief and keep rolling this, winding the mucus on it until the end of the rope came. Breath extremely fetid, so much so as to pervade the whole room in a few minutes. Teeth not to be seen, the gums completely hiding them. Gums greatly tumefied, both externally and internally, superior and inferior, from tuberosity to tuberosity, and from ramus to ramus; bleeding at the slightest touch; soft, spongy, bright red; hemorrhage hard to stop when once started. When the jaws were closed nothing but the tumefied gums came in contact, being unable to partake of any solid food for eighteen months previous. Unable to open the mouth but very slightly on account of the pain from cracking and pulling of the scab covering the lips, which was fully one-eighth inch thick in places.

History.—About twenty months previous, treatment was commenced for the removal of a small goitre, there being but a slight enlargement of the gland. Shortly afterward the teeth became sore, although there was no excessive flow of saliva as in ptyalism. The soreness increased so much that she was not able to masticate her food. From that time to the present she had taken no solid food. Has been under constant treatment by physicians of her own city, or physicians of note in a larger city; also consulting with others, among them Dr. Frothingham, then of the University of Michigan, who called me in to see whether or not the teeth had anything to do with the trouble, and if they did to extract them. This was my first introduction to the patient.

After an hour's examination, believing the teeth were innocent of the cause and that to extract them would only aggravate the case and might possibly cause a fatal hemorrhage, I so expressed myself to the physicians, stating my belief that a certain line of treatment would cure the patient and save to her a full set of sound teeth except one. They both left the case in my hands.

Treatment.—First, removed the scab in such a manner as not to irritate the raw surfaces beneath, by using a mixture of tepid water with a little iodine, carbolic acid and glycerine, soaking the parts and then gently lifting the scab with a sable brush. When it was fully removed I found there was no epithelium covering the lips, and they were so sensitive that it was almost impossible to work in the mouth, but by care succeeded in removing the most of the sordes on the articulating surfaces of the teeth by passing the

instrument between the folds of the gums; then applied a saturated solution of iodine—

℞ Iodine crystals..... ʒ ij.
Carbolic acid..... ʒ ss.
Glycerine..... ʒ iij.
M.

working it in through the folds of the gums thoroughly. Also directed her to sleep with a cloth over the mouth wet in

Water..... ʒ jv.
Above iodine solution.....minims viii.

and to wear it during the day time. Administered iodide of potassium in light doses internally, feeling assured that it would be beneficial to the patient if the trouble arose from the disease being driven to the gums or from the remedies used to cure it. The action of the treatment was as anticipated. A thorough application to the gums was made three times a day for three weeks of the saturated solution of iodine, etc. The cloth kept constantly on the mouth and moistened, as at first, and the mouth cleansed as thoroughly as possible morning and evening. The mucous membrane of the whole mouth was covered by sordes which could be scraped off in large quantities. Little pits filled with this sordes thickly studded the mucous membrane, from the gum to where it was reflected to the inner surface of cheek and lips, sometimes penetrating the mucous membrane a line deep. The character of the sordes was like that of typhoid fever. Was not found on the buccal or lingual portions of the teeth until the gums receded enough for the teeth to be seen and then it began to collect. The swelling had entirely left the lips in three days. They had been so long distended that the obicularis muscle had lost all power to contract and the lips lay in folds. The gums did not yield as readily, it being a week before they were reduced enough to expose the teeth all round. At the close of three weeks the tumefaction had so nearly passed away that the patient could masticate soft food such as bread, potatoes, etc. There could be seen fine lines of epithelium creeping over the lips, although still mostly raw and sensitive. The muscles of the mouth had resumed their functions, though still weak.

I now allowed the patient to return home with the under-

standing that she would come once a week. Applied the saturated solution of iodine, etc., locally, morning and evening, and for constitutional treatment gave Winchester's preparation of Churchill's hypophosphites of lime and soda. Within two months the patient gained twenty pounds. Epithelium covered the lips, gums nearly normal as to size, yet there was a fine red line along the margin of the gums which showed a tendency to return, and the teeth were tender to hard chewing. Chloride of zinc, peroxide of hydrogen, nitrate of silver and many other remedies seemed only to aggravate, and the same with excision. Reduced local applications to twice a week and constitutional treatment the same as before. Dismissed patient to return in one month, and monthly through the year. Saw her quarterly for two years more when the last trace of redness had disappeared, the gums looking perfectly healthy. The last year substituted one part cider vinegar and two parts water for iodine solution, using cloth to rub the gums.

DAVID'S WASH FOR STOMATITIS.

'Medical News.

Thymol	7 grains.
Borax	15 "
Water	1½ ounces.

A few drops of this are to be placed in a wineglassful of water, and the mouth rinsed with it.

In cases where the breath is fetid, owing to deposits about the tonsils and gums, the following wash is said to be serviceable:

Borate of sodium	15 grains
Alcohol	½ drachm.
Thymol	7 grains.
Water	1 pint.

IODOFORM PASTE.

Iodoform rubbed up with equal parts oil of cloves and eucayptus makes a convenient and reliable dressing.

PHENOL SODIQUE.

DR. J. W. JUNGMAN.

Ohio Journal Dental Science, March.

Carbolic acid (liquid) ..... 5 parts.
Caustic potash (solution) ..... 1 part.
Distilled water ..... 5 parts.

FOR DENTAL HEMORRHAGE

Mr. Bennett recommends peroxide of Hydrogen.

CARBOLIC MOUTH WASH.

DR. J. W. JUNGMAN.

Ohio Journal Dental Science, March.

Acid carbolic ..... gtt x.
Glycerine ..... ℥ii.
Water ..... ℥v.

DR. BLACK'S ROOT DRESSING.

Ohio Journal Dental Science, March.

Carbolic acid ..... 1 part.
Oil casia ..... 2 parts.
Oil wintergreen ..... 3 "

ROBINSON'S REMEDY.

Caustic potash and carbolic acid, equal parts.

HYPERTROPHY OF THE GUMS.

DR. L. C. INGERSOLL.

Take pointed scissors and remove the long points of gum growing in the inter-spaces of the teeth, down to the level of the

gum on the labial faces of the teeth; extend the cutting with the scissors or bistoury, along the buccal sides of the bicuspids and molars, if needed. Then reduce the inflammation with stimulants and astringents; wood creosote and tannin are among the best. They do not combine, but they act harmoniously when used together on the same pledget of cotton.

ADENOID ENLARGEMENT AND HYPERTROPHY OF THE ORAL TISSUES—TREATMENT.

DR. CHAS. B. ATKINSON.

Ohio Journal Dental Science, January.

In adenoid enlargement and hypertrophy of the oral tissues, local stimulation and compression are indicated with systemic tonization usually assisted by catharsis and alterative treatment. The local treatment in both of its phases may be chiefly secured through the use of a saturated solution of salicylic acid in alcohol, 95 per cent. This remedy should be carefully applied after drying the diseased surfaces with bibulous paper to prevent the spread of the medicine, owing to the affinity of the vehicle—alcohol—for the water ever present in the tissues. Increased advantage may be secured by using blue pyoktanin powder on the swab dipped in the salicylic acid solution. This absolutely suppresses any tendency to suppuration which often occurs in these congested surfaces.

It will be proper to state here that the pyoktanin is a terrible thing to stain, and that tartaric acid for the face and mouth and muriatic acid diluted (10 per cent. solution) for the hands and tougher skin surfaces will remove the stain. Care in its use will obviate much call for decolorants. In using both the blue and yellow pyoktanin, it will be found that salicylic acid solution localizes the action of the pyoktanin and prevents the spread of the color, which, when applied pure, is great, owing to the extreme solubility of the pyoktanin in the fluids of the mouth. Further local treatment will call for tannic acid paste, which will be considered further on.

The salicylic acid solution may be repeated daily if care be

exercised to prevent breaking the coagulated surface. In case the continuity of the coagulum be broken, the raw spot or spots should be carefully dried and a light application of the salicylic acid solution be made. This may be of reduced strength if circumstances demand it. The reduction may be secured by adding known quantities of alcohol to produce the desired dilution. However, the saturated solution will be found to fulfill almost every possible condition presenting.

The salicylic acid treatment should be alternated (in the second week usually) with a paste of tannic acid in glycerine, made as thick as possible. Where the eschar develops a tendency to easily separate and to prematurely expose the new surface in active growth, the tannic paste is indicated to toughen both the eschar and the granulating surface beneath it. The application of the tannic paste should gradually take the place of the salicylic solution.

As the case progresses and the enlarged tissue is seen to reduce, the applications may be made at longer intervals, from two or three per day to once, then every other day, twice a week, weekly and fortnightly, by which time most cases will be cured. Some will yield in two weeks, some require a year for the complete removal of the adenoid enlargement and the tendency to its recurrence. The systemic treatment should embrace the exhibition of tonics:

℞ Cinchonidinæ ..... ℥ ss.
Acid sulph. arom ..... ℥ ij.
Alcohol 95 per cent. ..... ℥ iij.
Glycerine C. P ..... ℥ ij.
Aquæ dest. q. s. ad ..... ℥ xv.
M. Sig. One teaspoonful ter die—

and cathartics:

℞ 10 McKesson & Robbins
U. S. P. cathartic pill.
Sig. One on retiring as required.

And in extensive cases an alterative may be needed in addition:

℞ Potass. iod. ..... ℥ j.
Aquæ dest. ..... ℥ vj.
M. Sig. Two tablespoonfuls ter die.

Further systemic indications are spare use of wines and alco-

holic beverages. Malt liquors may be used in moderation. Starch should be avoided. Sugar may be used freely and salt plentifully.

The constant exhibition of an antiseptic mouth-wash is of value in any treatment of the mouth and teeth:

℞ Hydronapthol ..... ℥ ss.
Tinct. calendulæ ..... ℥ iv.
Aquæ dest. q. s. ad. ..... ℥ viij.
M. Sig. Use freely of the clear solution, without shaking, as a mouth-wash.

In case mucous surfaces in contact should need treatment, a fold of bibulous paper smeared with vaseline or the tannic acid paste will be found an efficient agent in preventing adhesion of the contiguous surfaces and the consequent breaking loose of the eschar which is always an unfortunate accident, giving rise to much discomfort to the patient and prolonging treatment considerably.

The line of treatment as described is especially indicated in the numerous cases which present with passive congestion of the gingivæ, owing to the presence of non-conducting and ill-fitting dentures, which condition is a prelude many times to a chronic adenoid enlargement not at all easy to subdue. In such cases the construction of a new denture should be deferred until the enlarged surfaces are reduced to normal condition.

The place of the reduced tissue being supplied to the old denture with hard or "sticky" wax, added from time to time as the increased space requires. The waxed surface should be smeared with the tannic acid paste before placing in the mouth.

To Dr. W. H. Atkinson belongs the credit of introducing the salicylic acid solution and the tannic acid paste for the treatment of these cases.

CLEAN PLATE, HEALTHY MOUTH.

Dr. W. H. Jackson says surprising results will be obtained, where "plate sore mouth" exists, to instruct the patient to wash the plate thoroughly twice a day with some caustic alkali, such as ammonia, potash, or soda, and to wash the mouth with cider vinegar.

CARMINE TEST FOR ORAL SECRETIONS.

PROF. CHAS. MAYR.

International Dental Journal, April.

Take cochineal bugs and grind them in a mortar with a little alcohol and water, making a carmine solution. To test the secretions, put a little fresh solution on a piece of neutral paper. Yellow indicates acid; purpleish red indicates alkali.

ANTACID IRON PILL.

PROF. CHAS. MAYR.

International Dental Journal, April.

Sulphate iron	1 drachm.
Carbonate potash	1 "
Starch	1 "

Make into 24 pills. Take one three times a day.

METHYL-VIOLET.

Dr. C. L. Hungerford claims great success with this in treating obstinate abscesses and alveolar pockets.

PASTE DENTIFRICE.

Archives of Dentistry.

Precipitated chalk	150 parts.
Powd. white soap	150 "
Powd. orris root	50 "
Carmine	2 "
Oil of peppermint	15 "
Oil of cinnamon	25 "

Glycerine, a sufficiency.

Dissolve the carmine in a little solution of ammonia, and mix it well with the chalk and orris root, then add the soap and the essential oils, mixing the whole thoroughly in a mortar, and sifting

to insure thorough division of the oils and the coloring matter. When this is done, return the powder to the mortar, and make into a hardish mass with glycerine. The mass is now to be formed into cakes, and may be put up in tiny porcelain jars.

SIGMOMDY'S DENTIFRICE FOR CHILDREN.

Dental Record, February.

℞ Magnesii carb. .....
Pulv. saponis. .....aa ʒ iiss.
Pulv. ossis sepiæ. ..... ʒ iiss.
Essentiæ menthæ ..... gtt. iv.—M.

For very young children the following may be better:

℞ Magnesii carb .....
Cretæ præparat ..... aa gr. lxxv.
Sodii salicylatis ..... ʒ iij gr. xiv.
Essentiæ menthæ ..... gtt. iv.—M.

ARSENICAL PASTE—McINTOSH'S.

Dental Review, June.

Arsenic, in fine powder ..... 4 parts.
Cocaine hydrochlorate ..... 4 "
Menthol ..... 1 part.

Glycerine, sufficient to make a stiff paste, applied as arsenic is applied. With this formula two-thirds of the cases are comparatively free from pain.

ARISTOL—ITS USES.

DR. E. C. KIRK.

Dental Cosmos, July.

The use of a solution of aristol in essential oils, as a medicament for canal-dressings and as a topical dressing in acute pulpitis, naturally suggests itself. A somewhat extended use of it in these

classes of cases leads me to the following conclusions: That as a root-canal dressing its use should be strictly confined to those cases where pericemental inflammation is not a present factor, for the reason that it does not seem to possess antiseptic qualities of a sufficiently active character to enable it to overcome quickly the septic conditions due to putrefactive changes which are to be met in the canals of teeth. Such conditions demand the application of more active disinfectants and antiseptics; but when a thorough aseptic condition has been attained, an aristol root-dressing for preventing reinfection from without, and as a sedative root-dressing under a probationary filling, is in the highest degree satisfactory. My experience, therefore, leads me to limit its use as a root-dressing to the class of cases cited, and those immediately following extirpation of the pulp before the possibility of infection has occurred.

As an antiseptic in conjunction with permanent root-fillings, I have found it extremely valuable in connection with gutta-percha, as follows: a ten per cent., or even stronger solution if desired, of aristol in chloroform, in which it is freely soluble in all proportions, has dissolved in it sufficient gutta-percha to render the liquid of a creamy consistence. This may be used in the same manner and under the same conditions in those cases where chloro-percha is found to be useful. Or in large canals where gutta-percha cones can be used with accuracy, the cone may be dipped in the solution of aristol in chloroform and at once carried to position, the superficial solvent action of the chloroform upon the cone greatly aiding the process, while we at the same time have the satisfaction of maintaining complete asepsis of the canal by means of the aristol upon the surface of the root-filling which is in contact with the canal-walls.

I have made use of aristol in connection with root-filling materials by another method, which, so far, has yielded satisfactory results; but the cases are too limited, and insufficient time has elapsed to enable me to report fully upon the value of the method. A strong solution of aristol is made in the oil known to house-painters as "Japan dryer," sufficient of the drug being added to make the liquid somewhat thinner than glycerine. Into this is worked, with a spatula, freshly calcined oxide of zinc until the mass is like putty, in which condition it is to be worked into the root-canal. In the course of a few days the mass becomes quite hard,

and seems to fulfill admirably the requirements of a root-filling. I have used it principally in the canals and pulp-chambers of deciduous teeth, with entire satisfaction so far.

TANNATE OF GLYCERINE TO BE USED AFTER ARSENIC.

DR. A. W. HARLAN.

Dental Review, June.

One of the objects in using tannin after the destruction of the pulp is to prevent disintegration of the blood discs. That is one of the points that should not be lost sight of, because you do not wish any of the oral teeth to become discolored on account of pulp disintegration or blood disc disintegration, putrefaction or destruction. When a pellet of cotton is saturated with tannin and glycerine it is introduced into the cavity of a tooth after the destruction of the pulp with arsenic; at the same time there should be introduced an oxygenated oil, so that if gutta-percha is used as a covering the oil will prevent the ingress of water. One of the objects, which many fail to apparently appreciate in the use of tannin and glycerine in connection with the pulp of a tooth, is that it is intended to be used for the abstraction of water and to diminish the size of the pulp; it then becomes leathery and easily removed.

COCAINE FORMULA.

DR. L. C. WASSON.

Western Dental Journal, August.

Cocaine hydrochlorate	gr 20
Sulphate of atropia	gr 1-10
Carbolic acid, crystals	gr 10
Chloral hydrate	gr 5

Aqua pure, add one ounce.

Atropia, in small doses such as you give in hyperdermic injections from this preparation, is a cardiac, respiratory and spinal stimulant, which tends to counteract the toxic effects of the cocaine.

Carbolic acid aids the chloral in localizing the anæsthesia, and both tend to increase the anæsthetic properties of the cocaine and localize the effects, and both aid in the preservation of the solution, which is of itself quite desirable, as the ordinary cocaine mixture is almost worthless at the end of a week; while this preparation is good for months.

RIGGS DISEASE TREATMENT.

DR. A. W. HARLAN.

Western Dental Journal, June.

PROPHYLAXIS.

Cleanliness and exercise of the teeth, regular habits of eating, drinking, sleeping and recreating are essential to the maintenance of the soundness of the alveolar socket. A dentifrice should be used at least once daily by an adult. Such as:

℞ Precip. chalk, Powd. orris root ..... āā ℥ iij.
Resorcin ..... ℥j.
Saccharine ..... gr. v.
Powd. cuttle fish bone ..... ℥j.
Perfume oil peppermint ..... min. v.

M. Use on a brush which has been moistened with tepid water and brush the teeth vertically.

℞ Precip. chalk ..... ℥ iij.
Sodium fluo silicate ..... ℥ ss.
Tannin ..... gr xxx.
Powd. white sugar ..... ℥ jss.
Powd. cuttle fish bone ..... ℥ ss.
Oil wintergreen, perfume ..... min. x.

M. To make a paste: The addition of glycerine two parts and honey one part. Use once daily as directed above.

A very useful habit in prophylaxis is the daily rubbing of the gum with a piece of woolen cloth, white flannel, towards the necks of the teeth immediately after brushing the teeth. Any tendency to recession may be checked at once if the rubbing is persisted in

daily. Mouth breathing should be interdicted absolutely. The use of metal toothpicks is also forbidden. Waxed silk, rubber bands or quill picks may be used but no wood or metal. Unerupted or partially erupted teeth must be brought to their proper place or they should be extracted.

TREATMENT OF LOOSE TEETH.

A careful examination of the teeth should be made every time a patient is seen by the dentist. This is the only safe course. Make it a rule to clean and polish the teeth for every person coming into your hands if they only need one filling. By so doing, nothing will escape your attention. If you find on examination that there are more than one or two teeth which it would be useless to treat they are extracted at once; sound teeth are easily infected by retaining such useless teeth. The only variation from this rule would be where the teeth are exposed to view and it is possible, keep them in situ with bands or other appliances. All salivary deposits should be removed from the teeth. This is not an easy task. In many instances it requires two or more sittings of one hour each to accomplish this. Teeth covered with the so-called tartar are unhealthy and cannot be kept clean. Many mouths will be seen where there are no salivary deposits, or if there be any you will find them on the crowns, or necks of teeth. The difference between an ordinary salivary deposit and the granular islands or sheets found on the roots of teeth is most marked. The salivary deposit, seen in some instances, is deposited up to the line of forcible detachment of the pericementum and no further. If pus exudes when pressure is applied to the gum, it is an accident rather than a symptom of disease of the peridental membrane. Example: After the removal of the calculi from the teeth, the gums become re-attached in a few days without treatment if the mouth is kept clean. Bear in mind I do not say restored, but reattached. They lose their blunted edges, pus is no longer produced and the gum margin becomes nearly normal in size and color. It is only in the most aggravated cases of extensive salivary deposits on the teeth, with an abundantly filthy mouth, that we find evidence of concomitant pyorrhœa alveolaris. I doubt, even if in these extreme cases, the loosening of the teeth is more than mechanical, from the causes mentioned, filth and the bulk of the tartar combined caus-

ing the gradual but slow wasting of the alveolar process. On the other hand in the true pyorrhœa we find, possibly, only a pocket on the labial or palatal wall of the roots with a detachment of the peridental membrane. Pus and the granular bodies are nearly always present on the root. The gum is thickened, reddened and blunt on the edges, often receded from its natural position. If I have made clear this difference, most marked to the eye at a glance, you will forever after dissociate ordinary, or extraordinary salivary deposits, even accompanied by loosening of the teeth, from the true pyorrhœa. Let us dismiss this differential diagnosis and proceed to the rational treatment of the so-called pyorrhœa.

INSTRUMENTS.

Every operator must be the judge of the instruments he will require for the removal of minute objects from the roots of teeth. The Cushing scalers (set of six) and the right and left scalers (Harlan) with a right and left small spoon excavator, three or four delicate probes to explore the pockets, at least two syringes with three points for each, three long-shanked right-angle burs, half a dozen, 30 minim graduates in which to dissolve the medicines used, are about all that are required besides the instruments found in every dentist's operating case. A triangular double-edged knife to make crescentic cuttings in the gums will be needed and a few engine burs with long shanks to reach places in the back of the mouth where a root must be excised or the bone cut out.

OPERATING—(SURGICAL).

If only two or three teeth are involved (one very bad) make and adjust slender gold bands, link together and cement the bands to the teeth. The required operations may then be made with ease, both to the operator and patient. Inject between the gum and root of the tooth two to four minims of a four per cent. solution of hydrochlorate of cocaine to which one per cent. of carbolic acid has been added, about five minutes before operation beneath the gums. It is seldom necessary to inject this directly into the soft tissues themselves. Wine of opium will answer instead of the cocaine solution by using double the quantity. If possible all foreign matter should be removed at one sitting. If this is not possible, operate on not more than four or five teeth per sitting. If the pulp of a tooth is involved destroy it at once and later on fill

the root. When eight, ten or more teeth are affected do not begin any systematic treatment other than the adjustment of bands or gold wire, until all deposits have been removed from the roots and the adjacent carious or necrosed bone. Provide a mouth wash for the patient at this time composed as follows:

℞ Acid carbolic (liquified) ..... ℥i.
Resorcin ..... ℥ij.
Glycerine ..... ℥iij.
Water q. s. ..... ℥viii.

A few drops of oil of peppermint or any other desirable oil may be added to this.

THERAPEUTICS.

Use peroxide of hydrogen and bichloride of mercury combined as a cleanser and disinfectant for pyorrhœa pockets in the beginning of treatment.

℞ Hydrogen peroxide ..... ℥i.
Bichloride mercury sol. 1-1000 ..... ℥i.
M. Inject into the pockets until they are freed from all foreign matters.

When the pockets are deep, a horizontal incision through the gum to the bottom of the pocket may be necessary to work out all debris. Do not overlook this in the treatment of cases. If much pain is present in the beginning inject into each pocket a drop of vinum opii, belladonna or 1-2-3, or a diluted tincture of cannabis indica, or pack iodoform paste made with oil of cassia into the pockets. At this time a strong astringent or cauterizer is not indicated. In three days the patient must be seen again and the pockets re-syringed with the bichloride solution. Now is the time for astringent or escharotic agents. If the pockets are shallow without much caries of the process, use—

℞ Zinc. iodide ..... gr. x.
Water ..... min. xc.
M. Inject with a syringe and repeat in four days.

If the pockets are deep and sinuous, or carious, use—

℞ Acid sulphuric dil. . . . . min. xxx.
Essence cinnamon . . . . . ℥ss.
Water . . . . . ℥ss.

M. Inject with a syringe about one to two minims in each pocket. Dismiss the patient for four days.

During this time the patient should use a mouth wash on a soft brush, three times daily, such as—

℞ Creolin . . . . . ℥i.
Sodium fluo. silicate . . . . . gr. xx.
Oil cassia . . . . . min. xx.
Glycerine . . . . . ℥iv.

Dilute with water to suit.

At the third visit, if pus is no longer present, discontinue the bichloride solution, and repeat the previous treatment. At the fourth visit treatment not changed. Fifth visit use the following:

℞ Resorcin . . . . . gr. xxx.
Tannin . . . . . gr. v.
Oil cassia . . . . . min. x.
Glycerine . . . . . ℥i
Water (distilled) . . . . . ℥ij.

M. Inject with a syringe into the remains of the pockets.

It will be found that very desperate cases will be much improved at the end of twenty-three days, or twenty-seven days at farthest. Repeat this treatment for about sixteen to twenty days longer, at intervals of four days. The philosophy of this method of treatment is about as follows: Surgical, removal of all deposits; mechanical, supporting the teeth needing support by the aid of bands or wires; therapeutics, the use of pus and bacteria destroyers at first. Second, the use of agents known to be stimulating coagulators, and also favorable to developing tissue, and third, the use of a combined stimulant, astringent, coagulating and emollient agents, which will favor a return of the soft tissue to a normal condition, and not destroy the already new growths taking place from the bottom of the pocket. The greatest regularity in the treatment must be insisted upon and complied with by both patient and operator. It must be here understood that all teeth do not need to

be banded or ligated, as many of them are still firm, with only a moderate detachment of the pericementum. If it becomes necessary a root may be amputated in order to prolong the usefulness of a tooth, but such teeth will only remain for an average period of five years without giving trouble to their possessors.

MOUTH WASH--NEW REMEDIES.

℞ Sodii boras ..... ℥ ii.
Tr. krameriæ
Glycerini, āā ..... fl. ℥iv.
Aquæ cinnamomi, q. s. ad ..... fl. ℥iv.
M. Sig. Use three or four times daily as directed.

CARBOLIC ACID AND GLYCERINE.

Dr. H. J. McKellops says there is nothing better for ulcers in the mouth than to touch them with this remedy. He also recommends it in pyorrhœa pockets.

LISTERINE WASH.

DR. JOHN AULD.

Notes on New Remedies.

Benzoic acid	64 grs.
Borax	64 grs.
Boric acid	128 grs.
Thymol	20 grs.
Eucalyptol	5 mins.
Oil of gaultheria	5 mins.
Oil of peppermint	3 mins.
Oil of thyme	1 min.
Alcohol	3 fl. ozs.

Distilled water, sufficient to make 16 fl. ozs.

Dissolve the acids and the borax in five fluid ounces of the

water by the aid of heat; dissolve the thymol, eucalyptol and oils in the alcohol; mix the two solutions; add enough water to make sixteen fluid ounces, and, after standing twelve hours, filter.

OXYGEN AS AN ANTISEPTIC.

Mr. S. J. Hutchinson recommends the use of oxygen gas in the treatment of roots and alveolar abscess.

MYRTOL AS A STERILIZER.

Dental Review, April.

A very foul root may be sterilized by packing it with a piece of cotton moistened with myrtol. Seal the cavity with gutta-percha, through which make a small hole. It can be left for weeks, if necessary.

IODOFORM OIL.

Dominion Dental Journal, Sept.

To make it, Dr. D. V. Beacock says, shake amorphous iodoform in ten parts of oil of lavender.

RIGGS DISEASE—TREATMENT.

DR. G. P. GEIST.

Deutsche Monatsschrift fur Zahnheilkunde, April.

If there are deposits of tartar they are carefully removed and the teeth thoroughly polished, then take a wisp of cotton, wind it around a nerve broach, moisten it in a 15 or 20 per cent. solution of zinc chlorate and pass it around each tooth to the extent of the pocket. The cotton is burnt from the instrument and a fresh piece supplied for each tooth.

MILLER'S ANTISEPTIC MOUTH WASH.

British Journal Dental Science, April.

Thymol	gr. iv.
Benzoic acid	gr. xlv.
Eucalyptol	ʒ iii.
Alcohol	ʒ xxv.
Oil Wintergreen	gtt. xxv.

Enough of this mixture is added to a glass of water to produce a decided cloudiness.

GLYCERINE AND IODOFORM.

British Journal Dental Science, April.

For root dressing, Mr. Renshaw uses iodoform and glycerine after heating them to the boiling point. The liquid becomes a claret color, and the odor of the iodoform disappears.

FOR RIGGS DISEASE EXTERNALLY APPLIED.

DR. J. W. WHIPPLE.

Archives of Dentistry, March.

Tanic acid	gr. x.
Carbolic acid	ʒ i.
Glycerine	ʒ iii. to vi.

Shake well and apply to the gums two or three times a day, rubbing well with the finger.

OBTUNDING SENSITIVE DENTINE.

DR. H. S. LOWRY.

Archives of Denistry, May.

Incorporate with phosphoric acid, an equal amount of "Robinson's Remedy," by rubbing the two together on a porcelain or glass slab with a spatula, then add oxide of zinc, sufficient to make

a stiff paste; while in this consistency, place it in a thoroughly dessicated cavity of a tooth too sensitive to excavate, and allow it to remain a few days or two weeks if convenient. The fact of adding the "Robinson's Remedy" interferes with crystalization somewhat, but the cement compound becomes sufficiently hard for its intended use.

ANTISEPTIC MOUTH WASH.

DR. W. D. MILLER.

Dental Cosmos, November.

℞	Saccharini	2.5
	Acid, benzoic	3.0
	Tinct. ratantiæ	15.0
	Alcohol, abs	100.0
	Ol. menth. pip	0.50
	Ol. cinnam	0.50

Three parts of this to twenty-seven parts of water, kept in the mouth a full minute has a very marked effect upon the number of living bacteria in the mouth. If instead of water we use a four per cent. solution of peroxide of hydrogen in connection with the tincture, we obtain a still more striking result.

GARGLES FOR FETID BREATH.

Deutsche Med. Wochenschrift.

Thymol	1 part.
Borax	2 parts.
Alcohol	4 parts.
Distilled water	2,000 parts.

Mix, and use as a mouth-wash.

Salicylic acid	5 parts.
Saccharin	5 parts.
Bicarbonate of sodium	5 parts.
Alcohol	150 parts.

Mix. Add a teaspoonful to a glass of water, and with the mixture gargle the mouth and throat frequently.

IODINE AND GLYCERINE.

Tincture of iodine, mixed with glycerine, is claimed by Dr. Hammond to be more effective as a local application than the plain tincture. This is due to the retardation of the dissipation of the idodine, or more likely to the skin remaining soft, and, therefore, in a better condition for absorbing the drug.

NERVE PASTE.

DR. E. C. KIRK.

Dental Cosmos, August.

None of the formulas for asenical paste gives as good satisfaction as a combination of arsenic and Robinson's Remedy; make a stiff paste and work it into cotton fiber, which is loosely twisted and cut into pieces the size of mustard seed.

THYMOL DENTIFRICE.

Chemist and Druggist.

℞	Precipitated chalk	xv ounces.
	Soap, powdered	j ounce.
	Saccharin	x grains.
	Thymol	xv grains.
	Camphor	xxx grains.
	Vanillin	v grains.
	Oil of rose	vj drops.

Rub the camphor and thymol together in a mortar, and warm gently so as to render the mixture liquid; then add the chalk in small portions at a time, reserving about one ounce; next add the other ingredients, the perfumes being first separately rubbed with the remainder of the chalk.

PHENO-CAMPHOR.

Three parts of camphor, one part of carbolic acid.

PASTE DENTIFRICES.

Dental Office and Laboratory, March

VANILLA.

Vanilla bean	2 drs.
Cloves	½ dr.
Refined sugar	1 oz.
Prepared chalk	3 ozs.
Glycerine, a sufficient quantity.	

Beat the vanilla and cloves to a fine powder with the sugar, add the chalk and form a paste with the glycerine.

We would also suggest the following as desirable:

ROSE.

Prepared chalk	4 ozs.
Powdered orris root	2 ozs.
Carmine, No. 40	1 dr.
Oil of rose geranium	15 mins.
Oil of sandal	5 mins.
Glycerine, a sufficient quantity.	

Rub the carmine thoroughly with a small portion of the chalk, then triturate the remaining solids together, finally adding the oils and enough glycerine to form a paste.

Another variation is to add to the foregoing an equal quantity of powdered castile soap.

Any tooth powder may be formed into a paste with honey or glycerine. When the latter is used, the mass will keep soft indefinitely.

Any pure neutral soap, like castile, for instance, will answer as a tooth soap. If flavor is required, the soap must be melted, with the addition of a very little water, in a water bath, the perfume added and well stirred in, and the mass then pressed into a "frame" or moulds to dry.

SULPHUR FOR RIGGS DISEASE.

Dr. J. E. Cravens recommends sulphur used alone, or to be made into a tooth powder to make it more palatable.

ARISTOL FOR RIGGS DISEASE.

Dr. E. C. Kirk reports treating successfully Riggs disease with aristol, rubbed up in oil of cinnamon, applied to the full extent of the pocket on shreds of cotton. As a wash he prescribed ten grains zinc chloride to one ounce of peppermint water.

STEVENS' LOCAL ANÆSTHETIC.

DR. B. Q. STEVENS.

Archives of Dentistry, December.

Fluid ext. aconite, leaves ..... One part.
Spirits of camphor ..... One part.
Chloroform or ether ..... Two parts.

Apply locally on cotton pellets, and have patient breathe rapidly and full at the same time.

OIL OF CASIA FOR RIGGS DISEASE.

Dr. Newkirk says he successfully treats Riggs disease by removing any deposit from the root, then cleansing thoroughly with peroxide of hydrogen, and apply oil of casia with a cotton wrapped broach.

FLORAL TOOTH POWDER.

G. H. DUBELLE.

Dental Review, November.

Precipitated chalk	200 parts.
Powdered orris root	200 parts.
Powdered bicarbonate of soda	200 parts.
Powdered sugar of milk	200 parts.
Powdered red sandal	100 parts.
Powdered white castile soap	50 parts.
Salicylic acid	40 parts.
Oil of peppermint	6 parts.
Otto rose	4 parts.

CARBOLIC MOUTH WASH.

DR. SAM WHITE.

Southern Dental Journal, June.

Carbolic acid ..... 3 ʒ.
Glycerine ..... 3 ʒ.
Water ..... 3 ʒ.

Use on a toothbrush.

FOR RIGGS DISEASE.

DR. SUDDUTH

Recommends as a wash one grain chloride zinc to the ounce of water as a mouth wash.

COUNTER IRRITATION.

DR. A. W. HARLAN.

Dental Review, November.

Counter irritation produces a tetanic state of the vasomotor system, and should not be too long applied or a general paresis will result and cause loss of irritability of nerve fibre, with results more baneful than the original disease.

In a peridental inflammation from too early filling of the root or changes which this membrane undergoes from an acute attack of the so-called Riggs disease, prompt relief is desired. Scarification or leeching will not furnish this and counter irritation is called for. This may be accomplished by the use of a heated steel disk. A disk about the size of a nickel, dipped in boiling water and applied to the surface of the gum for less than half a minute will generally relieve these cases. In the first stage of peridental inflammation due to pyorrhœa alveolaris we may relieve by using the following refrigerant:

℞ Plumbi acatatis ..... ʒss.
Tinc. opii. ..... ʒss.
Water ..... ʒvi.

M.

This is to be applied with cotton. The gum should be dried and a mat of sufficient size, wet with the fluid, is placed upon it and allowed to remain for half an hour. When a blister is quickly needed stronger ammonia may be used, as follows: A pellet of cotton the size of a pea or a little larger is wet with the ammonia, placed on the gum and a copper or lead disk placed over it to keep the ammonia in contact with the gum. Allow it to remain one half minute, then remove and in a few moments the blister may be punctured. Wine of opium may be used to counteract this pain if it proves too severe. Absolute alcohol and chloroform or ether may be used in the same manner. The tincture of cantharides can also be limited in this way, or cantharidal collodion, croton oil or oil of mustard. After the production of the blister anodynes are to be used, as tinct. benzoin comp. cocaine in liquid vaseline, iodoform bituminized and worked up in lanolin—the aforementioned lead water and opium or black drop—vinum opii, cannabis indica, belladonna ointment made with lanolin, chloral-camphor in lanolin. The injection of chloroform two to four minims. The local application of tinct. gelsemium or veratrine—a continuous stream of hot water or the application of mucilaginous protectives or the painting with flexile collodion.

HEMORRHAGE.

Dr. W. L. Roberts strongly recommends tannic acic, ten grains to the glass of water, tablespoonful to be taken every five minutes till three doses are taken, then lengthen the time to fifteen minutes. He says a few doses will stop the bleeding.

FOR DESTROYING AND REMOVING PULPS.

DR. T. W. BROPHY.

Pacific Dental Journal, July.

℞ Morphia ..... grs. xxx.
Arsenious acid ..... grs. x.
Carbolic acid ..... q. s.

For removing the pulp, after removing the arsenious acid, antiseptically cleanse the cavity and apply a little of the following:

℞ Tannic acid . . . . . grs. x.
Glycerine . . . . . 1 drachm.
M.

This application will contract the tissues and render their removal easy.

STYPTIC COLLOID

Is composed of tannin in collodion, with the addition of tincture of benzoin.

ACTION OF DIFFUSIBLE MEDICINAL AGENTS IN LIVING TEETH AND IN PULPLESS TEETH.

DR. A. W. HARLAN.

Dental Review, June.

Pasteur pointed out that a certain class of micro-organisms would live without oxygen; he denominated these anærobic microbes. We have then to deal with this form of microbes in infected dentine not alone in living teeth but in pulpless teeth and for that reason a class of agents should be used which are non-coagulants and capable of permeating infected dentine.

PREPARATION OF CAVITIES.

In order to make as complete an exposè of the methods to secure the best results with disinfecting agents I trust you will overlook a little tediousness of detail. When a cavity is sought to be excavated with the object of filling it immediately, the sharp edges and corners should be cut down with a chisel, the tooth is then to be washed with tepid water and the rubber dam applied. The cavity is then superficially dried and is then to be washed with peroxide of hydrogen, or an aqueous solution of sodium fluosilicate 1 to 200. If the cavity is pressed full with beta-naphthol for a minute or two it will abstract water. Chloroform may be used for

the purpose of removing grease or adherent mucus from the cavity. The dried sulphate of zinc and absolute alcohol, glycerine and bicarbonate of soda will readily abstract water and various other agents which it is needless to mention. Redry the cavity. Apply a pledget of cotton or paper fibre lint wet with oil of cassia, eugenol or myrtol. The latter, pure, is preferable. Myrtol is not destructive when applied to the mucous membrane; it is rich in its oxygen carrying capacity, is easily diffusible, has no unpleasant taste and is capable of depositing more volatile camphor with greater disinfecting power than any of the essential oil group. As the excavation proceeds keep on reapplying myrtol so that the cavity will never be quite dry; when the excavation is completed the cavity is again bathed with myrtol and dried. If a layer of softened dentine must remain in the bottom of the cavity use the following prescription to disinfect that:

℞ Corrosive sublimate ..... gr. ij.
Peroxide of hydrogen ..... ℥i.
Tartaric acid ..... min. v.
M.

Aqueous solutions of Labarraque's solution, permanganate of potash or boro-glycerine may be used in place of the above, or even pure glycerine.

In applying the above to such a cavity use a pair of wooden pliers, or pliers with platinum points. Dry the cavity and then apply the myrtol in full strength and dry it again. All infection, septic or infectious matter will be destroyed by this method. There will be no coagulation of the organic portion of the dentine up to the time of the application of the bichloride solution. Then it will be incomplete and will not prevent the diffusion of the myrtol throughout the partially decalcified dentine.

Oils of peppermint, camphor, turpentine, thyme, cassia, cinnamon, caraway, eugenol, cajuput, eucalyptol, terpinol, myrtol or sassafras may be used in this manner with perfect safety. In the dental surgeon's hands while all the above named oils may be used as diffusible disinfecting agents, some of them are more powerful in their action on micro-organisms than others. For instance, oil of turpentine and terpinol are hydrocarbons, but the above and peppermint and myrtol are in nearly every instance more potent as

germicides than eugenol, eucalyptol, camphor oil, sassafras, cassia, cinnamon, caraway or cajuput, but even the latter in full strength are all powerful when applied for the disinfection of infective material in the cavity or roots of a tooth. Cassia has been shown to be the most powerful of the last named (Black). It is perfectly well known that these oils have stearopten bases which, as they grow older, are in solution, and when brought to a temperature of 94° F. and upward will deposit such camphors as are peculiar to the particular variety used. These camphors are disinfectant, diffusible and are exceedingly pleasant, and they are non-coagulators of albumen as well as valuable stimulants. They may be used to diminish the causticity of carbolic acid and they will dissolve the iodine compounds, combine with glycerine, creosote and are capable of very slight solubility in water.

If it is deemed a necessity to apply an antiseptic agent to a cavity in a tooth having a living pulp, an oil may be left in contact with the cavity, sealed with gutta-percha, or the cavity may be stopped with the oxysulphate of zinc for any number of days. There is uo danger of a tooth being discolored when a volatile oil is sealed within a cavity, as they are all absorbers of oxygen, and oxygen is a bleacher par excellence. The cavity should be well dried before introducing the oil.

There is no theoretical objection to the use of carbolic acid in the cavity in a living tooth, if it is re-applied from time to time, preferably warmed. It should not be used to protect the pulp from the invasion of micro-organisms in the deep-seated cavities previously referred to, as it will prove inadequate by lack of diffusibility.

DIFFUSIBILITY IN PULPLESS TEETH.

When a pulpless tooth is to be handled, any or all of the following conditions may be observed: The pulp has been recently devitalized with the pulp intact; it is in a state of decay; it is decayed or has long been putrescent; or having been removed by caries or designedly, the pulp cavity is exposed to saliva, etc. It may have atrophied, or having been converted into a gaseous substance, it has completely infected the dentine which has become discolored. When the pulp has been destroyed by the use of arsenic and the saliva has not been allowed to enter the cavity, nor an infected instrument or water, the dentine, except in the main cavity of decay

needs no sterilization, unless it becomes infected accidentally. The same care must be exercised in carefully sterilizing the cavity in a living tooth; even greater care should be used, for if anything is done that will cause the tooth to change color it is detrimental. From the time an arsenical application is made to the pulp of a tooth up to the completion of a root filling, nothing should be allowed to enter the tooth which is not placed there by the operator. Water, saliva and any foreign matter must be rigidly excluded. If this care is exercised there will be a minimum of abscesses. There is no particular objection to bathing the interior of a dried, sterilized root of a tooth with carbolic acid in a case of this kind if the cavity of decay has been excavated and there is no discoloration of the crown; but if the crown is discolored, it would be better practice to use chloride of zinc, diluted, twenty parts to eighty of water.

If it becomes a necessity at a later period to bleach the tooth the zinc chloride will not hinder the process. Even in a case of this kind it is better and safer to use an essential oil, such as I have mentioned, in the dried root previous to filling, because of the stored oxygen in the oil, which leaves a constant bleacher in the interior of the tooth. In course of time it may be dissipated and pass through the cementum and pericementum, but oils are not irritants, hence they will not injure the tissues. Coagulating agents simply coagulate and leave the coagulum to become a source of food supply to the ærobic and anærobic microbes. The oxygenated oils destroy them in two ways: Those which are poisoned by oxygen are destroyed when they come in contact with the oxygenated oil; the ærobic are destroyed by the volatile camphors which have as their basis C^{10} H^{16} O or O^2. This will be the most cogent reason for using them in the dried root. In the other conditions of pulpless teeth, save the one above mentioned, a still stronger necessity exists for the use of oils as sterilizers than applies when pulp destruction has been practiced by the dentist himself.

In the use of diffusible agents in the open cavity of a tooth, already pulpless, after syringing the cavity with tepid water no attempt should be made to disturb the contents of the pulp chamber or roots until the partially dried cavity is gently swabbed with a cotton pellet wet with the bichloride solution previously mentioned or with chloroform; when this is done the diffusible agent is to be

introduced into the pulp-chamber on cotton, silk or fiber lint. Occasionally small portions of the contents of the pulp-chamber may be removed, if no force is directed against the apical end of the root. There the greatest danger lies. If any poisonous or infectious matter is forced through the root, trouble ensues. Blood serum will not avert contagion in such a circumscribed area as is found around the apex of a root. A quick acting disinfectant in such a place is not desirable, as time must be allowed for the diffusion of the drug, through the mass of infected or septic contents of the tooth and also through the dentine. I consider this a matter of great importance for the following reasons: When infective material is long in contact with sound dentine, even though there be an open cavity, it becomes polluted. If there should be any defect in structure, inter-globular spaces or excavations or more than one foramen in the root, gases of decomposition will find a lodgment. Again the cementum is occasionally absorbed and redeposited on the dentine after the death of the pulp and even portions of the dentine have been carried away; if at this time infectious matters are present in the root canal in sufficient quantity we may account for the pericemental irritation which at times is so pronounced that we are otherwise unable to account for it.

If at this particular period in the history of a pulpless tooth the "immediate coagulating method" is practiced, the doom of the tooth is sealed. But if the slower diffusible agents are used they may, by their gentle stimulating action, not only do no damage, but they may assist in the redeposition of the lacking cementum. In no instance will these agents destroy the odontoblasts. To return to this interesting phase of the subject, after the lapse of three or four days the contents of the pulp chamber and the canal may be removed with sterilized instruments, being careful even at this time to use no force in doing this delicate operation. The diffusible drug may now be used freely if the cavity has been thoroughly washed with peroxide or any of the aforementioned non-coagulants. It is safer and better to allow such a dressing to remain sealed in the root for ten days before the instrumentation required prior to root filling is practiced. Saliva and water must be excluded from the tooth during the whole period of disinfection. It is only by keeping water out that the oils can be made perfectly effective. If pus flows from the canal when the tooth is first seen

there is no necessity for the use of an instrument in the root at that time. Simply get rid of the pus by aspiration or the destructive action of peroxide and the acidulated bichloride solution and dry the root canal, introduce the oil on cotton or otherwise and exclude moisture by a gutta-percha perforated plug. Water will not contaminate the oil. Bacteria will not live in it unless it be oil of gaultheria. If it is not possible to use gutta-percha as a covering, petroleum jelly can be used on cotton for a day or two until soreness and elongation of the root has disappeared. By the use of the oils the pigments will be bleached which may be lodged in the tooth. If there are any red blood disks present, the addition of a small pellet of cotton, moistened with a saturated solution of tannin in glycerine, will fix them so they will not disintegrate and cause further discoloration of the crown.

The volatile camphors which are deposited will destroy any septic or infectious matter present, and we have to deal with an aseptic root interior at the time of the introduction of the root filling. This of course is gutta-percha, always preceded previous to its introduction with either oil of cajuput or eucalyptol. Other agents will dissolve gutta-percha, but none of them are so agreeable to use as the ones mentioned. Both are effective sterilizers, and they will aid by their solvent properties the diffusion of gutta-percha in the minutest openings in dentine or multiple foramina. The rubber dam which encloses the tooth operated upon should be washed with a sodium fluosilicate solution, 1 to 200, and all instruments used in the various operations required must be sterilized with the $\frac{1}{300}$ boroglycerine or other effective agent to accomplish that purpose. If the dentist desires to reduce to a minimum the casuality of pericemental inflammation and abscesses, he must be thus thorough in his use of topical medicinal agents, and be should be on the alert to avoid conveying to or covering up contagium in a pulpless tooth.

ORAL SURGERY.

COMPOUND FRACTURE OF THE LOWER JAW.

DR. C. H. WELLS.

Dominion Dental Journal, July.

This is a compound fracture of the lower jaw, from the effects of a blow of a club, which struck the jaw to the left of the centre coming end-wise, the centre of the blow being just in front of the canine, and causing a complete fracture between the second temporary molar and the six-year molar, on the left side; also another at the canine, or between the canine and the first molar; and another between the right canine and the lateral incisor; and the fourth between the second molar on the right and the first molar. Then there was another fracture, extending from one of the fractures at the canines to the other, thus breaking the alveolus with one canine and four centrals completely out, which the mother brought me in her hand. After examining the case carefully, I consulted the physician who had brought them to my office, and he proposed that we disjoint the lower jaw entirely, and take it out, as he did not think it possible to save it. I thought that I could make an improvement on that. Gave the patient ether, got the fractures reduced as near as possible to their proper places, and had them held in place by assistants until a wax impression was taken, when a capping plate was made to fit over all the lower teeth, which were all knocked out but the two permanent molars; replaced them all but one lateral incisor, where the socket was gone altogether, and I left it out, which I regret, as I saved all that were put in, and I believe might have saved that one also. I then riveted a V-shaped piece of plated steel to the capping plate, passed a bolt down through the head of the V, soldered it fast there, and carried it down through an iron plate well padded underneath the jaw. On this bolt I put a thumb-nut that could be loosened or removed at will; this I allowed to remain three days, rinsing the mouth with antiseptic washes; then removed it carefully and rinsed the mouth well with antiseptics, and at the end of the first week the patient

was living on fairly solid food. After this, only removed the plate once a week. At the end of the fifth week, removed the plate altogether, and discharged the patient. Strange to say, he has since erupted his bicuspids and canines, and they all came all right; also the second molars are in their proper place and position. The enlargement of the bone at the fractures is very slight, so slight that you would not notice there had been anything wrong.

ANEURISMAL TUMOR OF THE RIGHT ALVEOLAR PROCESS AND VAULT OF THE MOUTH TREATED BY INJECTION.

DR. JOHN S. MARSHALL.

International Dental Journal, June.

What is needed in the treatment of this class of cases is to produce a firm clot, instantaneously if possible, and to maintain it in an aseptic condition, without the dangers of sloughing or hemorrhage.

In the perchloride solution of proper strength it would seem that we had all these requirements.

By the production of instantaneous and complete coagulation of the blood in aneurisms of this class and nævi, the dangers from embolism in remote parts of the body would seem to be entirely overcome, and thus one great objection to this method removed; at least this was my thought upon the matter, and I determined to try it in this case, in preference to the other methods which might have been chosen.

In order to produce complete and firm coagulum instantaneously it would be necessary to use a solution of much greater strength than had been previously recommended.

From the size of the tumor, I concluded that in all probability it contained from one to one and a half ounces of blood, and that the introduction of five minims of the following solution, perchloride of iron one part, water four parts, would not be sufficiently escharotic to do any mischief when diluted with this quantity of blood.

On December 22, 1889, I injected into the tumor five minims of the above solution, which produced instantaneous coagulation,

making the tumor feel as firm as a fibroma; considerable pain followed the injection, but this gradually subsided after a few minutes, but he complained for some hours of a strange fulness of the right side of the head. On withdrawing the hypodermic needle a little oozing occurred, which immediately discolored the mucous membrane for a little distance around the puncture made by the needle. No other unpleasant symptoms followed.

December 28 the mucous membrane, at the point punctured by the needle, sloughed, leaving an opening into the sac about the size of a silver half-dime, exposing the hard clot. There was not the slightest hemorrhage, but considerable anxiety was felt for fear of such an occurrence.

Tiersch's antiseptic solution was constantly used as a mouth-wash during the whole progress of the case, and after the slough occurred the sac was syringed with the same solution at short intervals, day and night.

December 31 the clot was broken up and removed, when it was found that the aneurism also occupied the antrum of Highmore, and had produced absorption of the palatine process of the superior maxillary bone and the nasal wall of the antrum, leaving a large opening into the nasal fossa. The case progressed without a single drawback from this time onward. The opening into the antrum and floor of the nasal fossa finally closed. There has been no recurrence and the patient considers himself perfectly well.

The sloughing of the mucous membrane at the point of puncture proves that the strength of the solution was too great for absolute safety, and, should I be called upon to treat another case of this class, I should not feel warranted in using a solution stronger than one in six or eight parts of water. This, I think, would produce the desired results, without the dangers of causing a slough and possible hemorrhage.

CLEFT PALATE OPERATION FOR A CHILD.

DR. T. W. BROPHY.

Dental Review, August.

The little patient was only one week old when I first saw her. Being a little too feeble to undergo an operation, I waited a little

while until all the organs had become accustomed to and were performing their functions well before operating. When three weeks old the operation was made. In order to close the cleft, the soft palate is closed in the usual manner. The edges of the hard palate are then pared so as to remove sufficient osseous tissue to get a free exudate. The secret of success principally lies in getting a surface upon which an exudate will freely form. Having done this the cheek is elevated as high as possible with a drill which will make a hole of sufficient size to admit a large wire. I drilled through the maxillary bones, both anterior and posterior, to the malar process, carrying the drill above the hard palate. Introduced large silver wires through the holes made in this manner. Having passed the wires through I took a perforated lead button, such as gynecologists employ in operations for closure of ruptures of the perineum, about three-quarters of an inch long, and slipped the wires through it. The wires were then twisted on both sides by crowding on the cheeks. Having done this, I took a knife, passed it above the wire, and divided both superior maxillary bones, not dividing the soft parts more than is necessary to introduce the knife, but completely dividing the bones. I now tightened up the wires that were passed through the lead button, and the cleft is easily approximated. I then introduced one stitch through the anterior border which was inclined to gape. I have the satisfaction of informing you that the hard palate has united throughout the entire length.

NECROSIS OF THE MAXILLARY BONES—TREATMENT.

DR. T. L. GILMER.

Dental Review, April.

The best we can possibly do is to assist nature. There are a few important measures to be observed, viz: cleanliness of parts, keeping the dead and diseased bone in as nearly an aseptic condition as possible, (this is of prime importance), the removal of dead bone as soon as separated from the living, stimulation of the parts to healthy action, and if the patient's system is enervated, suppor-

tive measures should be adopted. It is not considered by the most experienced surgeons desirable to make exsections or resections of bones under necrotic influences. Such active measures may be the cause of an extension of the disease, while if suitable precautions are observed, nature may usually be entrusted to mark the line of demarkation, when the sequestra will be easily removed. The separation of the living from the dead bone is in some cases a slow process; even under the best treatment months may be required before sequestration is complete; while in others, nature is exceedingly active, the sequestra being thrown off in a few weeks' time.

Usually when the patient presents, if the disease be fully established, there is, as before said, a fetid discharge of pus, which is very deleterious to the patient's welfare, besides rendering him exceedingly offensive to those who must be about him. By opening up the soft parts so that perfect access may be had to the dead tissue, and by first washing out the pus pockets with peroxide of hydrogen, and then with an aqueous solution of the permanganate of potash, the odor may be abated; and if the potash solution be frequently used as a wash, the mouth may be kept free from offensive odors and in a generally wholesome condition. The potash solution may be used in strength of from two to four grains to the ounce of water. Peroxide of hydrogen is the best of all cleansers where there is pus, and in necrosis, pus is always present. Before the application of antiseptics, in order that the medicaments may be certainly brought in direct contact with the diseased tissue, peroxide should be employed to remove the pus, blood or dead tissue which might otherwise intervene. As soon as there is a separation of the dead from the living bone the sequestrum should be removed, as its presence is a source of irritation and liable to cause an extension of the trouble. All teeth which may be a source of irritation should be extracted. The pus pockets, after thorough washing with peroxide of hydrogen, unless the parts need stimulating, may be packed with cotton dipped in campho-phenique, or water saturated with oil of cassia, and the opening closed with cotton dipped in chloro-percha. If, after the application of the medicament, the openings have been thoroughly closed the campho-phenique or cassia odor will be very perceptible on the cotton dressing the following day, when the treatment should be repeated, and the dressing renewed in order that the parts may at all times be under

the most perfect aseptic conditions. If there is an inactivity of the parts, the application of aromatic sulphuric acid will prove beneficial. It may be conveniently applied on cotton and used in full strength or diluted one-half with water. Aromatic sulphuric acid is antiseptic and stimulant. It also has the reputation of dissolving dead bone, which is true to a limited degree, but I do not believe it possesses for this purpose sufficient power when applied in the mouth to make it valuable.

If the patient cannot be seen each day for a change of dressing, then perhaps a better plan of treatment than packing the pockets, is to supply him or his attendant with a syringe, in order that the parts may be thoroughly cleansed each day, using as a wash either peroxide of hydrogen, followed by carbolized water, or by a permanganate solution. But the progress of the disease should be closely watched by the surgeon, the patient reporting at least one or more times a week. If the disease depends upon specific causes, such as syphilis, before a cure can be made, specific medication will be necessary, and with this treatment the same local application and other precautions are equally necessary as in those cases dependent upon other causes. The hygienic condition should be the best of all through the course of this disease. The patient should be nourished on good strong tissue building food, that which will give the greatest support to the system, and if he be in an anæmic condition, internal medication should be resorted to. Quinine and iron (the muriated tincture is considered preferable) make a combination which gives, usually, good results. In cases where there is hemorrhage, either from the removal of sequestra or otherwise, which may occasionally occur in the progress of the disease, usually syringing the parts with hot water suffices to arrest it. If it should not yield to this treatment, packing the pockets with cotton dipped in a mild astringent, such as alum water or phenol sodique will generally control it, or the cavity may be plugged with cotton and tannic acid. Monsel's solution, or any of this class of iron hæmostatics are not desirable, since, owing to their caustic influence, they cause death of so much of the surrounding tissue, and when the clot and slough which it causes is removed, there is often a more serious hemorrhage than before. Galvano cautery is a very effective remedy for this trouble.

If the patient is of a hæmorrhagic diathesis the internal administration of the tincture of iron is very useful in preventing hemorrhage.

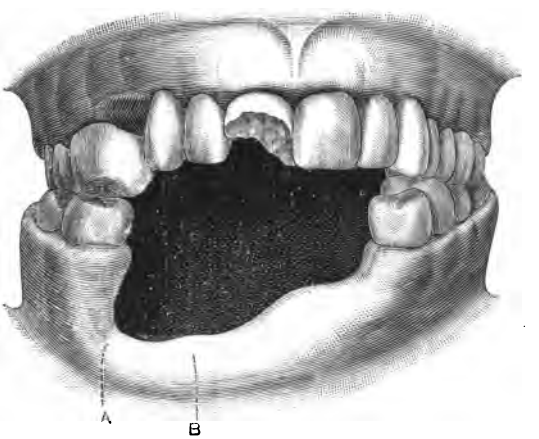
FRACTURE OF THE LOWER MAXILLA BY A GUNSHOT WOUND—TREATMENT BY AN INTERDENTAL SPLINT BRIDGE.

DR. J. D. PATTERSON.

Dental Cosmos, October.

The patient, Quartermaster-sergeant Charles Campbell, of the Seventh United States Cavalry, in the battle with the Indians at Wounded Knee, near the Pine Ridge Agency, was struck on the lower maxilla with a ball, and the anterior part of the maxilla from the second bicuspid upon the right to the second molar upon

Fig. 1.



the left side shattered. Shortly after the fight, such surgical care as was possible was given the case. The loose teeth and parts of the alveolar process and bone below, which were entirely loose, were removed, and the wound in the lips and cheek stitched together. It was thought possible at first that there might be union between the remaining partially-detached fragments, but gradually piece after piece came away, until at a point in the region of the right cuspid, for the space of about six lines, the bone (Fig. 1, A, B)

was entirely gone, leaving the remaining posterior parts freely movable.

Six weeks after the injury the patient was brought to me, presenting the following condition: The outside wounds had healed with considerable cicatricial tissue; the left fragment of the maxilla was easily movable, and an abscess was discharging freely upon the face opposite the loose end, with another abscess opening under the chin near the symphysis; the left side of the jaw was much firmer than the right, but had healed far inside—about a half-inch—from the normal position. There was still considerable swelling, and small spiculæ of bone frequently made their way to the surface. The lower jaw was, of course, entirely useless, and was kept tightly bandaged to the upper.

The first treatment instituted was as follows: I found that a bridge-splint placed upon the parts as presented would result in retaining the incorrect position of the left side, and that pressure brought to bear to force the pieces apart would result in still greater deformity, because the more easily movable right fragment would give way, leaving the left in its former position. The first step then was (if possible) to remedy the distorted position of the left side. I proceeded as follows: I banded the first lower molar upon the right side, and also the first upper molar upon the same side, attaching lugs to the bands for the reception of a screw, and firmly screwed them together. I then placed a jack-screw upon these molars on the palatal side and against the molar on the left side, and forced that side into its correct position, which had been determined by models beforehand. I then banded the upper and lower teeth upon this side as upon the other, and screwed them firmly together.

I then dismissed the patient for ten weeks, the intention being to overcome the growth of cicatricial tissue which forced the left side against the tongue. I believed the abscesses were caused by the movement of the loose ends upon the soft tissue, and the result proved that this surmise was correct, as they soon healed after the parts were secured firmly to the upper jaw.

At the end of three months the patient returned. He reported himself as very comfortable, save only that he was limited entirely to soft foods. On the removal of the bands the left side, after two or three days, swerved slightly inward and there remained, not

quite, but nearly in correct position. I then proceeded to make the splint-bridge shown in the cut (Fig. 2). No details are necessary in describing this to any experienced bridge-workman. It is a splint as well as bridge. In restoring the contour of the lower lip and lost portion of jaw, rubber is vulcanized to the bridge. It has been worn for six months, and the patient, whom I saw four

Fig. 2.

weeks ago, says he is a new man, and his appearance holds the statement true. He eats solid foods with comfort, and the splint-bridge is a success. I am watching the case as to the growth of new bone where it is entirely gone. He is a young man in good health, and the chances for this are good.

INTERDENTAL SPLINT.

DR. T. W. BROPHY.

Western Medical Reporter.

The case I present is one of double fracture of the lower jaw. The parts were not placed in position for some three weeks after the accident. The fracture occurred on the left side, between the first and second molar teeth, at the point where the facial artery crosses the inferior maxilla. Upon the right side, between the cuspid and lateral incisor, is the second fracture. The force of the muscles attached to the genial tubercles has drawn the anterior fragment downward, and the action of the masseter and internal pterygoid muscles elevate the posterior fragment. In order to overcome this displacement and readjust the part to its proper position requires a great deal of force. The simple device I have adopted in this case has enabled me to fix the parts and adjust the teeth so as to re-establish the proper antagonism. This was accomplished

by a device for the anterior part. It consists of bands of gold, so fixed to the teeth as to make them wholly immovable.

The bands are fixed two teeth at least away from the point of fracture, the fracture having occurred between the cuspid and the lateral incisor; the bands are fixedto the two bicuspid teeth; the tooth in immediate contact with the point of fracture is generally loosened somewhat, and is not well adapted to the fixing of these bands. They are made broad, extending down to the gum tissue and up to the masticating surface of the teeth. This band is fixed so as to make it impossible for the bone to move. The posterior fracture is treated in the same way. In case the interdental spaces are not sufficiently wide to admit of two thicknesses, one plate may be introduced and the second band lapped over that, so as to form a complete band for each tooth. After first putting them in apposition, an impression of the parts is taken in wax while the teeth are in proper position, then the two bands are taken off and placed in wax in the relation they will have when the bone is properly adjusted. Having done this, we take strips of gold and lay them along the teeth and attach them together, and the bone is crowded up and approximated. If we wish to exercise more than ordinary care, these may be secured more firmly in position by making use of oxyphosphate of zinc and cementing them firmly in place.

I present this as a novel way of adjusting fractures, but one which accomplishes all that may be desired. The advantage is that the parts are put in proper position, are held immovable during the process of repair, and the patient has full control of the lower jaw in speaking, etc.

ANTRUM, ENTERING THROUGH THE NARES.

DR. J. N. FARRAR.

Dental Cosmos, January.

I sometimes enter the antrum by way of the nares by using a tube about six or eight inches in length and about the size of a large knitting-needle, oval at the end, (the end being closed), and having several holes in the sides near the end. This tube, which is slightly spiral in form, pass up the nose, thence between the turbi-

nated bones into the antrum. There are two of these tubes, right and left. In making them, use a skull to get the form that enables it to pass up through the nose and through the opening into the antrum, thence to the bottom of it. With these instruments I am able to make a diagnosis, and oftentimes treat the case without extracting a tooth.

DENTAL DEVICES FOR CORRECTING DEFORMITY ATTENDING THE EXTIRPATION OF THE LEFT HALF OF THE INFERIOR MAXILLA.

DR. ALBERT WESTLAKE.

Dental Cosmos September.

Dr. Charles McBurney, surgeon to Roosevelt Hospital, New York, on March 14, 1891, requested me to examine the mouth of Mrs. K., age twenty-six, who had entered the hospital preparatory to the removal of a sarcoma, involving a part of the inferior maxilla.

Fig. 1.

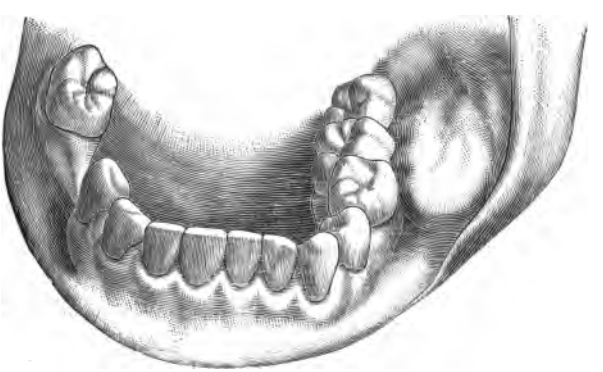


Fig. 1 represents the dental aspect of the jaw immediately preceding its excision. The tumor was about as large as an egg, was hard, painless, ulcerated on upper surface, and bulging chiefly outward. It extended nearly to the angle. The second molar was pushed far inward. In the left submaxillary triangle an enlarged lymphatic, nearly as large as a bean, was noted.

The plan suggested by Dr. McBurney was to have an appliance made and fitted to the mouth prior to the operation, so that immediately afterward the fixture could be inserted to retain the remainder of the maxilla in a normal position during the process of healing; this to be followed by a piece of mechanism such as would in some measure correct the great deformity which usually results from such an extensive loss of tissue.

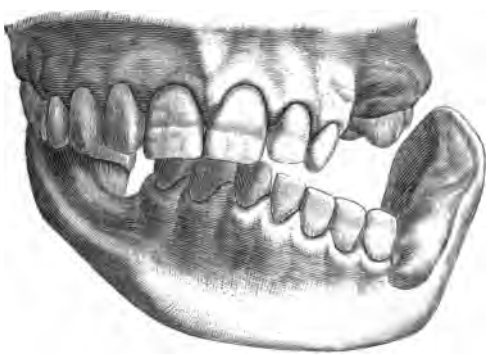
This cut shows the deformity.

I obtained correct plaster representations of the teeth in their articulating relations, and constructed an interdental splint, which was fitted and kept in readiness for use.

On March 21 Dr. McBurney operated with a view to the removal of nearly the entire left half of the inferior maxilla. An

incision was first made just beneath the lower edge of the jaw, extending from the median line to the angle. This incision was supplemented by a vertical one extending from the angle upward along the posterior border of the ramus as far as the middle of the lobe of the ear. The cheek and superficial soft parts were dissected from the outer surface of the bone, and the muscles, etc., from the inner surface as far as the mucous membrane, keeping well off from the tumor. The mucous membrane was then divided, the left first bicuspid extracted, and the inferior maxilla sawed through at that point. The end of the left section was then seized and dislocated outward, the pterygoid muscles were divided, and the bone removed at the articulation.

Fig. 3.



The splint was adjusted before the patient left the operating table to illustrate its application in view of the surgeons and students present. The splint was then removed until recovery from the influence of the anesthetic. Thereafter it was kept in position, except during necessary irrigations, until the patient was dismissed as cured.

It was a happy inspiration that prompted the preliminary construction of this appliance, as the recovery of the patient was more rapid than ordinary, the splint fitting accurately and keeping the articulation of the remaining teeth continuously normal.

On March 30 the sutures were removed, and on April 16 all the dressings were discontinued by reason of the complete healing of the parts.

The microscopical examination of the tumor demonstrated it to be a spindle-celled osteo-sarcoma.

Accurate plaster impressions of all the teeth were obtained, and their articulations were correctly represented by the models. Silk ligatures were attached to each of the remaining inferior teeth, and the ligatures were successively caught on the hook of a "cotton scale" graduated to register ounces and their fractions. By traction on the scale against the retracting or extensive action of all the muscles of the dismembered jaw, the amount of force requisite to overcome the drooping tendency of the jaw (see Fig. 3) was ascertained. The maximum distributed downward, or mouth-opening force of which the patient was capable, was registered at four pounds and two ounces. The involuntary or habitual tendency of the jaw to drop equaled an average force of a little less than one pound.

An examination of all the accessible text-books disclosed no measurements of the dynamic powers of this group of muscles under like circumstances, and hence I infer the novelty of both theory and practice in the course and constructions adopted in this case.

The first procedure was to fit and adjust upper and lower electro-metallic plates provided with retracting spiral springs of gold wire, but this contrivance was abandoned as being too bulky and lacking sufficient tensile strength in the springs to draw the jaw into position and retain it during the process of mastication. Several devices were then tried in various ways, including an inclined plane of steel. The final plan was to make for the superior left molars two gold cap-crowns, which were soldered together, and at their buccal junction there was soldered a stiff and knobbed gold wire projecting downward at an angle of about forty-five degrees. A gold cap-crown was also made for the inferior left cuspid, and to the labial surface of the crown was soldered another short knobbed gold wire extending in the direction of normal occlusion. A steel spring similar to that used in the flexible connection of the dental engine with the hand-piece was repeatedly cut off and tested, until the required resilient power was found in a length of thirty-two coils. This spring was electro-plated, and the looped ends slipped over the knobs on the crowns, which had been previously cemented onto the molars and cuspid respectively. The action of the device was very gratifying, for when the patient closed her mouth the remaining teeth were brought into normal apposition, as represented in Fig. 4, and were so retained by the action of the spring. The

great mental depression experienced by the patient in consequence of the awkward position of the jaw was immediately relieved, and both mastication and speech made easy. The spring can be removed at will by the patient, and if occasion shall require, a new one can be substituted without displacing the cap-crowns, which, being accurately fitted and highly polished, are perfectly aseptic.

Fig. 4.

It was confidently anticipated as the result of this mechanical expedient that the remaining operative muscles would be strengthened and trained to double duty, so that in time the spring could be dispensed with, and a metallic plate carrying a vulcanite "plumper," highly polished, could be fitted to fill out the lower

integuments and to a great degree remedy the external deformity. Such a plate I have in readiness for insertion.

Six weeks after the operation the patient, assisted by the spring, has nearly overcome the retrograde tendency of the jaw, and, upon removing the spring, can articulate the teeth; but the muscles are not yet sufficiently strong for the mastication of meat, etc., without the artificial aid.

The precautionary measure of having in readiness the interdental splint, together with the aid of the spring and the intelligent co-operation of the patient in training the muscles, have combined to secure the present success, and there is little doubt of her being ultimately able to forego recourse to the spring, which, nevertheless, will be available whenever it may, for any reason, be required.

MISCELLANEOUS.

TUBE FOR REMOVING SALIVA.

DR. W. H. ROLLINS.

Dental Cosmos, March.

Have the tubes drawn from platinum so they can be heated to sterilize them, and by having a minute relief hole in the top of the bend, the tissues are not drawn in. Instead of an expanded end, the tube is the same diameter throughout. The bend is of such a length that the tube hanging on the teeth just touches the floor of the mouth. Where there is tenderness of the gums, little soft rubber bulbs are used to slip on the end. One advantage of the platinum tube and bulbs is that they can be easily sterilized.

COPPER ROOT CANAL DRYER, HOW TO MAKE.

DR. WM. F. GAY.

Dental Review.

Anneal the copper wire thoroughly. Take an instrument of the desired size to hold the point, allow $2\frac{1}{2}$ inches for the point and then coil around the instrument until desired size is reached, then coil back to the point again and then over again to the end. This end may be retained in place with a little silver solder. The copper point each time it is used is annealed and always remains flexible. New points can be made at a trifling expense, or a new canal point soldered in when desired.

IMPERMEABLE GLUE.

Revue Industrielle.

Soak ordinary glue in water till it softens, and remove it before it has lost its primitive form. After this, dissolve it in linseed oil,

over a slow fire, till it is brought to the consistency of a jelly. This glue may be used for joining any kinds of material. In addition to strength and hardness, it has the advantage of resisting the action of water.

HOW TO MAKE CONTOUR PLIERS.

DR. CALVIN S. CASE.

Dental Review, January.

Take small ordinary flat-nosed pliers, draw the temper from one nose and bend it slightly forward, make the occluding surface any desired shape, from a delicately curved lip to a rounded face. Grind a counter-receiving depression in the other lip and polish surfaces.

BENICKE'S CEMENT.

Scientific American, May 23.

Melt together carefully one part of catoutchoue with two parts of linseed oil, and gradually incorporate with it three parts of white bole, so as to form a plastic mass. This cement is not attacked by hydrochloric and but very little by nitric acid. When heated it softens very little. It does not easily dry upon the surface. If mixed with one-fifth of its weight of litherage or minium, it dries up in the course of time and becomes hard.

TO DRILL LARGE HOLES IN GLASS.

Scientific American, May 23.

Turn a piece of maple wood to the size of hole wanted, bore into the end of it to the depth of one-fourth of an inch, or deeper, using a bit, say, one-quarter of an inch smaller than the wood, fit the wood chuck to a bit brace. Bore a hole in a piece of board the size of the maple bit, fasten it to the glass with the hole over the point where the glass is to be drilled, insert the drill and feed with emery powder. Bore half way through on one side, turn the glass and finish.

ARTIFICIAL GOLD.

Western Jeweler.

Take 100 parts (by weight) of pure copper, 14 parts of zinc or tin, 6 parts of magnesia, 56 parts of sal ammoniac, 18 parts of quick lime, 9 parts of cream of tartar. Melt the copper, and add gradually the magnesia, sal ammoniac, quick-lime and cream of tartar, each by itself, in the form of powder. Stir the whole for half an hour, add the zinc or tin in small pieces, and stir again till the whole is melted. Cover the crucible, and keep the mixture in a molten condition for thirty-five minutes. Remove the dross, and pour the metal into molds. It has a fine grain, is malleable and does not easily tarnish.

TO BORE RUBBER STOPPERS.

Scientific American, June 13.

Use a sharp-edged brass tube as thin as possible and lubricate with soap and water. Rotate the tube and press against the stopper.

FLEXIBLE FILES.

Dominion Dental Journal, July.

Dr. D. V. Beacock says convert separating files into flexible files by drawing the temper. Pass them through a spirit lamp till blue.

TEST FOR IMPURITIES IN MERCURY, AND PROCESS FOR REMOVING SAME.

DR. JAS. H. HARRIS.

Pure mercury, so-called, is seldom, if ever, sufficiently pure, and should, before using, be carefully tested for lead, which is the most objectionable metal and the one generally present in mercury.

Lead tends to greatly impair the edge-strength of a high-grade amalgam alloy. If sulphuretted hydrogen does not act upon hydrochloric acid, previously boiled upon the mercury, the absence of contaminating metals is shown.

Mercury may be purified in the following manner: If it is dark looking and has upon it a dark powder, it should be forced through a chamois leather to free it from this oxide. Then place the mercury in a shallow vessel, such as a saucer; pour upon it a weak solution of nitric acid:

Nitric acid	4 drs.
Water	2 ozs.

Allow this to stand for about three hours, agitating the mercury from time to time with a glass rod or small stick; then pour off the acid, wash the mercury with pure water, and leave in a shallow vessel to dry, or absorb the moisture with bibulous paper and bottle at once. The above formula will be sufficient to purify six or eight ounces of mercury.

To ascertain if lead were present as an impurity of the mercury, add to the solution of acid, which has just been poured off from the mercury, a solution of chloride of sodium, (common salt, 1 dr.; water, 6 ozs.;) or, hydrochloric acid, 1 dr.; water, 6 ozs., (the latter preferred), when a white precipitate will form, and continue to add the acid slowly till no more precipitate is obtained. This precipitate may be both lead and mercury. Allow the precipitate to stand about thirty minutes to settle down. Next, pour off this acid and add to the precipitate three or four ounces of boiling water and stir for a few moments, when all of the lead salt present will be dissolved, leaving the mercury salt undissolved. Now filter while hot, and to the solution, which passes through the paper, add, while still warm, a few drops of a solution of iodide of potash, (potash, 10 grs.; water, 2 ozs.,) when a yellow precipitate will appear if lead be present. If an excess of the potash be added, the precipitate will be redissolved. The process of refining should be repeated, using a fresh solution of acid each time, till no precipitate is obtained, or the mercury may be discarded as impure and a new quantity of mercury obtained and tested as above, and so continue until mercury is procured that will stand this test.

AMALGAMATING ZINCS.

Scientific American.

This is accomplished in several ways: 1. By dipping the zinc in dilute sulphuric acid and then dipping the end of it into a small quantity of mercury, afterward rubbing the surface with a brush. 2. Dissolve 1 pound of mercury in 5 pounds of nitro-muriatic acid (nitric acid 1 part, muriatic acid 3 parts), heat the solution gently to hasten the action. When a complete solution of the mercury is effected, add 5 pounds more of nitro-muriatic acid. The solution should be applied with a brush, as immersing the zinc in it is wasteful. 3. To the bichromate solution commonly used in batteries, add to every pint of solution 1 drachm of bisulphate of mercury or a similar amount of nitrate of mercury (mercury dissolved in nitric acid). By employing this method, the amalgamation of the zincs is maintained continuously after the first amalgamation, which must be accomplished by method 1 or 2. 4. In the Bunsen Grove, or Fuller battery the amalgamation may be accomplished by placing a small quantity of mercury in the cells containing the zincs. 5. Place a little mercury in a saucer with some dilute sulphuric acid. Dip the zincs into dilute acid. Then with a little strip of zinc or galvanized iron touch the mercury under the acid and rub it on the zinc. This will transfer a little to the surface, and a few minutes rubbing will make the zincs as bright as silver. A very small globule of mercury is enough for a single plate.

TO CLEAN HANDS.

To clean the hands from laboratory dirt, rub on petroleum jelly and wash in warm water with castile soap.

TO MAKE PHOSPHATE CEMENT.

DR. W. H. ROLLINS.

Archives of Dentistry, July.

Concentrate pure phosphoric acid till semi-solid; mix aluminum phosphate with it by heating. For use, mix with basic oxide

of zinc to the consistency of putty. The light oxide of zinc should not be used here, nor in making oxychlorides. The cement sets in two minutes. If you buy phosphoric acid, test it. Twenty per cent. of sodium phosphate is often found in the glacial.

TO UNITE PLATINA SCRAPS.

DR. J. H. BEEBEE.

Items of Interest, February.

Take a small piece of gas-pipe and close one end by welding. Put the platina scraps into the open end, and with an iron rammer drive it home. Heat the pipe to an extreme welding heat, and placing it quickly on an anvil, strike it one or two hard blows with a sledge; or, what is better, put it under a drop or trip hammer. Cut out the portion of the pipe containing the platina, and throw it into nitric acid to dissolve away the iron. This will leave the platina in a mass welded together to be rolled into plates or drawn wire.

TO CLEAN IMPRESSION CUPS.

DR. C. TOPLEY.

Items of Interest, March.

Boil them for a few minutes in a strong solution of concentrated lye, rinse in hot water, and wash with soap and a stiff bristle brush, using, if necessary, a little finely powdered pumice stone; again rinse in hot water, wipe dry, and polish with whiting and a fine brush wheel on the polishing lathe.

MAKING AND TEMPERING STEEL SPRINGS.

DR. WM. H. STEELE.

Items of Interest, April.

When the steel spiral spring of an instrument gets broken it is much more satisfactory to make one than to send the instrument off, and be without it for a week or more.

To make them use the best spring steel wire, select a smooth

iron rod the size of the spring to be made; carefully draw the temper from the wire, fasten the rod and one end of the wire in a bench vise. Now wind the wire evenly and closely around the rod, until you get the length of the wire required for the spring. Take the rod out of the vise, fasten one end of the spring to the rod, taking hold of the other end, draw it along the rod until the spirals are the correct distance apart, to give the amount of spring wanted, fasten it firmly to the rod, then make the spring and rod red hot, and quickly plunge them into cold water. After drying, rub them all over carefully with oil, and move them about in the flame of a lamp until the oil takes fire, which will give the spring the proper temper. Springs can be made direct from tempered wire, but they are much more durable if shaped and then tempered.

LIQUID GUTTA-PERCHA.

U. S. Pharmacopeia.

Gutta-percha in thin slices, 1 oz.; chloroform, 8 fl. oz.; carbonate of lead, in fine powder, 1 oz. Add the gutta-percha to 6 fl. oz. of the chloroform in a stoppered bottle, and shake them together frequently till the solution has been effected. Then add the carbonate of lead previously mixed with the remainder of the chloroform, and, having several times shaken the whole together, set the mixture aside and let it remain at rest till the insoluble matter has subsided. Lastly, decant the clear liquid, and keep it in a well-stoppered bottle. One part of this solution in 10 by weight of chloroform produces an excellent and convenient preparation for painting over cuts or wounds.

GASSNER'S DRY BATTERY PASTE.

Scientific American, August.

Zinc oxide	1 part by weight.
Sal ammoniac	1 part.
Plaster of paris	3 parts.
Zinc chloride	1 part.
Water	2 parts.

TEST FOR PEROXIDE OF HYDROGEN.

PROF. CHARLES MAYR.

International Dental Journal, April.

About three grains of iodide of potash, three grains of starch, and about one ounce of water. That will give a very fluid combination, and when spread on some kind of reception paper will make a first-rate test. Whenever you get a violet spot, the peroxide is of questionable value, and when blue it is very good. This paper will keep quite a while.

ALUMINUM SOLDER.

Schlosser.

Gold	30 parts.	or,	Gold	50 parts.
Silver	20 "		Silver	10 "
Platina	1 "		Copper	10 "
Aluminum	100 "		Aluminum	20 "

FOR BURNS.

A ten per cent. salve of aristol is highly recommended.

DISINFECTING INSTRUMENTS.

DR. W. D. MILLER.

Dental Cosmos

An exposure of three to five minutes to a boiling one to two per cent. solution of soda is the means I recommend for sterilizing dental as well as surgical instruments. It is to be emphasized that the solution must not be simply hot, but boiling, since the motion of the boiling water materially assists in rapidly raising the temperature of the instrument to 100° C., and at the same time loosens up any matter that may be clinging to the instrument. Naturally a thorough brushing of the instrument and rinsing in pure water goes a great way toward freeing it from germs, but it can never

completely disinfect it; and whatever method of disinfecting we may use, the instruments should be first cleansed mechanically, though where boiling water is used for disinfecting, the mechanical cleansing beforehand may be virtually dispensed with. Furthermore, I wish to testify to the fact that although weak solutions of carbolic acid are very often illusory in their action, they are still better than nothing, and undoubtedly much good has resulted from their use.

RESTORE THE COLOR TO GOLD.

The Keystone says if saltpetre is added to the pickling solution, for gold alloyed with silver, that it will restore its color, removing the dark color caused by the heat.

CEMENT FOR ACQUARIUMS.

Scientific American, Aug. 1.

Take twenty-five parts gutta-percha in shreds and melt it carefully. Add seventy-five parts ground pumice stone, and mix in 150 parts Burgundy pitch and melt well together.

CARE OF THE HANDS.

There are not nearly as many secrets in hand treatment as people imagine. A little ammonia or borax in the water you wash your hands with, and that water just luke-warm, will keep the skin clean and soft. A little oatmeal mixed with the water will whiten the hands. Many people use glycerine on their hands when they go to bed at night, wearing gloves to keep the bedding clean; but glycerine does not agree with every one. It makes some skins harsh and red. The best preparation for the hands at night is white of an egg with a grain of alum dissolved in it. Roman toilet paste is merely white of an egg, barley flour and honey. It is a first-rate thing; but it is a sticky sort of stuff to

use, and does not do the work any better than oatmeal. The roughest and hardest hands can be made soft and white in a month's time by doctoring them a little at bed-time, and all the tools you need are a nail brush, a bottle of ammonia, a box of powdered borax, and a little fine white sand to rub the stains off, or a cut of lemon, which will do even better, for the acid of the lemon will clean anything.

USING THE TOOTH-BRUSH.

DR. A. H. THOMPSON.

Western Dental Journal, August.

The brush should be used against the gums, the folds between the gum and the cheek or lips, the lingual gums, the sub-lingual space, around and over the tongue, and as far down the fauces as the irritability of the throat will permit. This irritability can be overcome to some extent, so as to permit of deep brushing of the throat, which will conduce to better health of the parts, and do much to postpone catarrhal and other troubles. If this cleansing by brushing could be extended to the pharynx and nares also, the health of these parts would be promoted by the removal of catarrhal and other offensive accumulations.

REMEDY FOR IVY POISONING.

Dr. Jas. J. Levic, Medical News, says dust the surface with powder of aristol.

POLISHING CAKE.

DR. G. A. MAXFIELD.

Dental Cosmos, October.

Two parts of wax and one part of tallow are melted together, in which is stirred fine emery to make a cake. This is used on sand-paper disks, which prevents them from heating and catches the gold dust.

PREVENTOR OF MOUTH BREATHING.

DR. F. B. DARBY.

With parafine and wax a sheet is molded over the anterior teeth above and below, also extending up and down over the gums; to this model two points are fastened corresponding with the angle of the mouth. This is then reproduced in white or pink rubber, when it is placed into the vestibule of the mouth between the lips and the teeth.

FISSURE DRILL.

DR. C. N. JOHNSON.

Dental Review, June.

Dr. Johnson uses a drill made from an ordinary size inverted cone bur by grinding it to a wedge shape. A fissure drill shaped the same way does well.

SIMPLE METHOD OF REMOVING FOREIGN BODIES FROM THE NOSE.

DR. T. J. SLATON.

Place a thin cloth over the mouth of the patient, close the nostril not containing the substance by pressing on it with the finger, put your mouth to the patient's and give two or three strong puffs.

HOME-MADE SYRINGE AND DROPPER.

DR. H. R. NEEPER.

Archives of Dentistry, September.

Get the rubber bulb from an ordinary drop-tube, and fit a hypodermic syringe needle to it by wrapping a strip of dam on the hub of the needle, or by slipping several thicknesses of rubber tubing over the hub, so that by stretching the bulb over the hub with

the clamp forceps it will fit entirely air-tight. It is a very serviceable device, and its many uses, such as syringing out canals, carrying medicaments to the teeth, etc., will be readily appreciated. By using a needle with a large bore, a cleanly oiler for the engine can be made.

RENOVATING OLD GUTTA-PERCHA.

MR. HEADRIDGE.

British Journal Dental Science, August.

Knead the gutta-percha in hot water in which bicarbonate of soda has been dissolved.

SPRING FOR SHAW ENGINE.

Items of Interest, June.

Dr. E. H. Moore says he substitutes the Johnson spring for the one on the engine.

Dr. C. H. Stadlinger uses rubber tubing that fits snugly to spring, using clamp forceps for applying it.

NEAT PLASTER BOWLS.

British Journal Dental Science, May.

Saw in half the celluloid toy balls.

CLEAR SHELLAC VARNISH.

National Druggist.

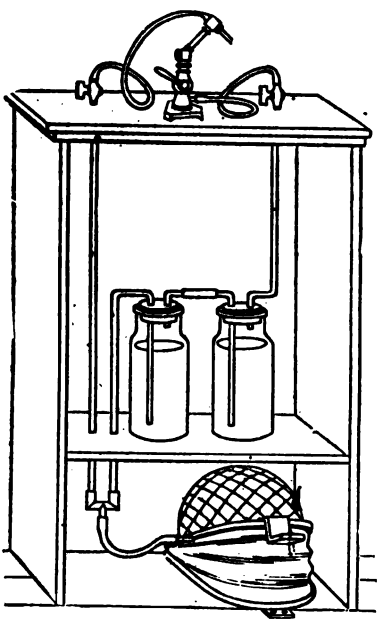
Make an alcoholic solution of shellac in the usual way; a little benzole is then added, and the mixture well shaken. In the course of from twenty-four to forty-eight hours, the fluid will have separated into two distinct layers, an upper alcoholic stratum, perfectly clear, and of a dark red color, while under it is a turbid mixture containing the impurities. The clear solution may be decanted or drawn off with a pipet.

HOME-MADE GAS GENERATOR.

PROF. E. W. ROCKWOOD.

Items of Interest.

It is well known that the vapors of gasoline, or similar hydrocarbons, are easily combustible. There are two methods which may be employed to convert the liquid into a gas or vapor, either by the aid of heat, as in the common gasoline stove, or by passing through it some other gas, such as air, which carries along with it some of the gasoline in the form of a vapor. It has been, within a year, proposed to make use of this principle to obtain a flame suitable for dental soldering, by blowing such vapors through the flame of an alcohol lamp; and, more recently, to blow air through the liquid and store the inflammable products in a gas holder. Both the alcohol lamp and the gas holder may, however, be dispensed with, the gas being made only as it is wanted for use.



At the request of some of the students in my department I have arranged an apparatus which can be cheaply and easily constructed, and has proved itself far superior to an alcohol flame for use in mechanical dentistry, the cost of operating it being very small. It may, therefore, be of interest to those of the profession who are so situated as not to have illuminating gas at their disposal. The apparatus may be placed under a work table as indicated in Fig. 1. As in use here it consists of two wide-mouth bottles filled to the neck with loosely packed cotton and perhaps two-thirds full of gasoline. Each bottle has an entrance tube of about one-fourth inch inside diameter, passing nearly to the bottom, and an exit tube, which only passes through the stopper. Two half-gallon bottles arranged

in this way are enough to so saturate the air that it will furnish a steadier and more satisfactory flame than if only one bottle is used. The stoppers may be of cork but not of rubber, as this is attacked by the gasoline. The cotton prevents the liquid from being carried out of the bottle, but its principal use is to cause the air to pass through in small bubbles and so to become more thoroughly saturated.

I have employed for furnishing the blast of air a Fletcher foot bellows. If a Bunsen burner is to be used, this bellows is all that is needed; the gas can be led directly to the lamp, or to the nozzle held in the hand. If, however, a blast lamp or crucible furnace is to be supplied, there must either be two sources of air, or part of that from the bellows must be forced through the bottles and part blown into the flame. This can be accomplished by inserting a T of gas-pipe into the tube coming from the bellows. One branch of this can carry air to the gas generator, the other to the lamp. Each of these should have a stop cock to regulate the amount of air which it is desired to pass in either direction. As rubber is dissolved by gasoline, its use should be, as far as possible, avoided in the connections. The bottles may, if desirable, be placed outside of the room with a pipe connecting them with the source of air and another returning to the lamp.

If a continuous flame is needed for a considerable time, as in vulcanizing, a gas holder, such as is used for nitrous oxide, can be substituted for the bellows, first filling it with air, and arranging it so that the air shall be forced by a weight through the gasoline.

SOLDERING GLASS AND PORCELAIN WITH METALS.

La Nature.

The process is very simple. The portion of the tube that is to be soldered is first covered with a thin layer of platina. This deposit is obtained by covering the slightly heated glass, by means of a brush, with very neutral chloride of platina, mixed with essential oil of chamomile. The oil is slowly evaporated, and, when the white and odoriferous vapors cease to be given off, the

temperature is raised to a red heat. The platina is then reduced, and covers the glass tube with a bright layer of metal. On fixing the tube thus metalized, and placed in a bath of sulphate of copper, to the negative pole of a battery of suitable energy, there is deposited on the platina a ring of copper, which will be malleable and very adhesive, if the operation has been properly performed.

In this state the glass tube covered with copper can be treated like a genuine metallic tube, and be soldered by means of tin to iron, copper, bronze, platina, and all metals that can be united with tin solder.

TO TRUE CORUNDUM WHEELS.

DR. W. H. STEELE.

Items of Interest, October.

When wheels have become hollowed or dished on one side, place them, warped side down, on a piece of plate-glass, hold the piece of glass over a lamp so the heat will strike the glass under the center of the wheel. When the wheel has softened so it will settle smoothly to the glass, remove from the heat and put it in a cool place, where the wheel will set quickly. This work must be done very carefully so the wheel will not overheat and run out of shape.

TO REMOVE MERCURY FROM GOLD JEWELRY.

Heat the article until it turns a little yellow, which drives out the mercury, then throw into a solution of cyanide of potassium to remove the yellow color.

BRONZING FLUID.

Pharm. Zietung.

A very pretty fluid for bronzing paper, glass, leather, etc., is prepared as follows: Diamond fuchsine ten parts, and methyl-violet five parts, are dissolved with the aid of heat in strong

alcohol. To the solution five parts of benzoic acid is added, and the whole is boiled from five to ten minutes, till its green color has changed to a lustrous golden bronze. This is very brilliant, durable and adherent, is easily laid on with a brush, and dries in a few minutes.

BATHS FOR CLEANSING METALS.

The Keystone.

Baths for dipping metals admit of almost endless combination, and depend as much on the alloy to which they are applied as on the acids and other chemicals which compose them. Copper, brass and bronze articles are first dipped in dilute sulphuric acid to remove tarnish, then in a mixture (by weight) of one hundred parts of nitric acid, fifty parts sulphuric acid, one part common salt, one part wood soot. When the articles look bright they are rinsed in a liberal supply of clear water. This rinsing water must be either running water or the water changed frequently. Where a dead lustre is desired, use nitric acid, two hundred parts; sulphuric acid, one hundred parts; common salt, one part; sulphate of zinc, one to five parts. The mixture is used cold.

FOR SWEATY HANDS.

For sweaty hands, the Keystone says there is nothing better than ammonia, a tablespoonful to two quarts of water.

CARE OF IMPRESSION CUPS.

DR. W. H. STEELE.

Items of Interest, October.

The cups can be kept just as clean and smooth as when they came from the depot; but, to do this, it is very important that they should be kept free from dents, scratches and bruises. When altering the shape of a cup to fit some peculiar mouth, do not hammer

it or use pliers, as any change can be easily made with the fingers. When pouring the cast, do not tap the bottom of the cup with the spatula, or anything that will jam it; get a rubber face door bumper, screw it into the plaster bench, and tap the bottom of the cup on this. As soon as the impression is removed from the cup, wash off thoroughly with a stiff brush, sapolio soap, and soft water; wipe dry, then wipe over with silver-cleaning rouge, mixed to a paste with water, take it to the lathe and hold it on the cotton wheel a few minutes to bring out the polish.

EASY FLOWING SILVER SOLDER.

The Keystone.

Pure silver twenty-three parts, pure copper thirteen parts, pure zinc four parts. Such easy-flowing silver solder can be mixed with gold solder to form a solder to flow very readily.

WOODEN EMERY WHEELS.

Scientific American, November 11.

Prepare a solution of white glue, to which add a very small percentage of common molasses, say one to two per cent. Spread the emery on an iron plate heated to about 200°. Coat the wheel smoothly with glue and immediately roll it in the emery. When the glue is dry brush off the surplus emery.

TO MAKE CORUNDUM WHEELS.

DR. W. H. STEELE.

Items of Interest, October.

It is a simple matter for a dentist to make his own corundum wheels, and, by so doing, have a fine assortment of wheels at a small cost. Patterns will be needed for the different sizes; these patterns can be turned out of soft wood; be sure they are true, and have them smooth; to prepare them for molding, dip them into

hot, melted paraffine, let them cool, and polish with a piece of chamois skin. To make the mold, place the pattern on a piece of plate-glass, put a rim of cardboard around it, deep enough to reach one-half inch above the pattern, and large enough to clear it an inch on all sides; with sticky wax secure this rim tightly to the glass, then mix plaster to about the consistency of cream, hold the glass by one corner in the left-hand; with the right pour the plaster slowly into the opposite corner, shaking down gradually toward the left-hand; this should be done carefully, to get a perfect mold. When the plaster sets, turn it over, remove the glass and pattern, dry the mold, and it is ready for use. Melt over a slow fire half-pound of shellac; when thoroughly melted and mixed, add four pounds of corundum, fine, medium, or coarse, as you desire the wheel; stir until the corundum is evenly distributed through the shellac; pour into the plaster mold till as full as it will hold; then take the piece of plate-glass, which should be warmed and smoked on one side; press it, smoked side down, on the mold, forcing out all surplus material, place a weight on the glass, and let stand till cold.

FUSIBLE ENAMEL.

Scientific American, Dec. 12.

White fluor-spar 12 parts, unburned gypsum 12 parts, borax 1 part.

TO SOLDER, CLEAN AND POLISH.

The Keystone.

Get a glass tablet, which comes for learning children to draw with a lead pencil—the glass is ground to be slightly rough; on the center of this place a few drops of water, and then take a lump of borax as large as a large walnut, and grind, with a circular motion, the lump of borax and drops of water until you form a thin paste; cut your hard solder into little pieces, and, with a small camel's-hair pencil-brush, first paint the parts to be soldered with the borax, and then pick up with the brush a piece of solder of

the proper size, and after completely coating it with borax-paste place it on the crevice to be soldered.

To keep the article (ring, for instance) from coloring (blackening) many workmen use a preparation of borax and yellow ochre, while others employ boracic acid and yellow ochre. A good composition for this purpose is composed of borax and fine charcoal powder, made up into a thin paste, with water, and painted on the work, leaving the joint to be soldered clear. After soldering, allow the job to cool to a blue heat (600° F.) and throw into "the pickle" (sulphuric acid, one part; water, six to eight parts). If the ring looks greenish, place it for a few seconds in a hot mixture of equal parts (by weight) of strong sulphuric acid and saltpetre. If the fitting was done as it should have been, a file is hardly necessary. Stiff, hard bristle brushes in a polishing lathe, using first emery cake (tallow and emery); then wash, and use another stiff brush with rotten-stone or tripoli. Wash again, but this time very carefully, to remove all particles of grit left from the rotten-stone; and finish with rouge mixed with alcohol, employing either bristle brushes or cotton-flannel buffs. For smoothing many articles of jewelry, a skein of linen thread can be used, tying one end securely to the bench and letting the opposite ends hang loose. The threads are smeared with emery-cake, rotten-stone and oil, or rouge and oil, as the condition of the job demands, and then the piece of jewelry rubbed back and forth on the threads, holding the loose ends of the threads in the hand. For the inside of a ring, the threads are passed through so as to be inside. A round ring-buff can be used for inside, placing the buff in the lathe-spindle. Hand buffs can also be employed, which can be obtained of the tool and material men. These buffs come both in half round stick covered with emery paper, or sticks of the same shape covered with felt for rouge.

DISSOLVING RUBBER.

Rubber can be dissolved more readily by adding from five to fifteen per cent. of oil eucalyptus to the benzole or carbon bisulphide used; in the latter proportions, the mixture of carbon bisulphide will dissolve nearly twenty per cent. of rubber.

PRACTICAL USE OF A SMALL ELECTRIC POWER.

DR. J. E. STANTON.

Scientific American.

I have a primary battery charging two cells of storage battery, which has been in daily use for nearly a year without once failing. From the storage cells I run a motor, one-eighth horse-power, giving power enough for all dental operations, viz: dental engine and lathe, the electric mallet and mouth-lamp. The power is fully equal to the demand at all times. The secondary battery needs no attention whatever, and all that has been done to the primary battery was to pour out the water once in two months, and put in about four pounds of blue vitrol to each jar. There are ten jars of primary, coupled to give five volts and about one ampere; as a matter of fact, it will give more than one ampere during the two months, but after that period the quantity lessens.

The cost of maintaining this is about seventy-five cents per month, and it requires about one hour to renew it if all the cells are cleansed at the same time, which is not necessary. The capacity of the storage cells is four volts and thirty-five ampere hours.

GOLD ALLOYS FOR BRIGHT WORK.

The Keystone.

22	K.	22	parts	pure	gold,	1	silver,	1	copper.		
20	"	20	"	"	"	2	"	2	"		
18	"	18	"	"	"	3	"	3	"		
16	"	16	"	"	"	3½	"	4½	"		
14	"	14	"	"	"	4	"	6	"		
12	"	12	"	"	"	3½	"	8½	"		
10	"	10	"	"	"	4	"	10	"		
9	"	9	"	"	"	4½	"	10½	"		
8	"	8	"	"	"	5½	"	10½	"		

Gold solders are usually the same alloy as is being used, reduced two karats by ordinary hard solder; or, sometimes what jewelers call compo., an alloy composed of two parts of copper and one of zinc; or, as some call it, spelter solder.

TO TEST GOLD AND SILVER OF DIFFERENT QUALITIES.

The Keystone.

Gold can be tested by applying a solution of chloride of gold, or a solution of nitrate of mercury, as neither of these substances attack fine gold, but, we would beg to add, practical assayers never use them. The best practical test is the touchstone and test-needles. A touchstone is cut from a species of black basalt rock, and in preparing it, it acquires a sort of grain or roughness like ground glass. Nitric acid has no effect on this stone. In conjunction with such a touchstone, we have "test-needles," made of brass with gold tips, these tips being alloyed to different fineness, thus—8, 10, 12, 14, 16, 18, 20, 22 carats. To use these needles, select, according to judgment, two test-needles coming nearest the supposed alloy of the article proposed to test. Let us suppose the article is a ring, and our judgment tells us the ring is about 12 carats. Take the touchstone and rub the ring on it so it will make a distinct line of metallic lustre on the surface of the black touchstone. On each side of the metallic line from the ring, make a similar line with test-needles of 10 and 12 carats. Now prepare a bottle of pure nitric acid, to which add as much common salt as can be taken up on a silver five-cent piece for every ounce of acid. The acid should be kept in a glass bottle with a long glass stopper, the stopper resting in the acid; on withdrawing it, a small drop of acid remains on the stopper; rub the point of the stopper on the stone, spreading the acid across the three streaks of gold, and watch the result. If the 10-carat streak disappears by the action of the acid before the streak made by the ring, we know that the gold in the ring is finer than 10 carats, but if it disappears before the streak made by the 12-carat needle, we see that the ring is less than 12, or between 10 and 12 carats fine. Care must be taken to make the streaks on the stone of the same intensity, or we can not judge correctly. To test the quality of silver, make the same sort of streaks on the touchstone, only we need no test-needles; then prepare a test-solution by dissolving five parts of chromic acid in ten parts of distilled water. A few drops of this solution spread over the metallic streaks on the stone will give a blood-red color to them if silver; the finer the silver the more intense the color.

Of course, it is understood that if the article is plated the plating must be filed or scraped off. Practical assayers seldom use any test except the salted nitric acid kept for gold test. If the article is silver, the test-acid will blacken, and if it is alloyed to any extent, will boil up green. If an article is plated on German silver, on cutting through the silver coating the acid will boil green. Britannia metal will only blacken with the acid, but the thickness and softness of articles made from this alloy will enable the workman to instantly detect it.

TO CLEAN BURS OF RUST.

DR. C. C. PATTEN.

Items of Interest, September.

When the shafts get somewhat discolored with rust, or otherwise, put them in a paper box, with a small quantity of pulverized pumice; after a few minutes of rapid shaking change the pumice for common wood sawdust, which removes all traces of pumice and leaves the burs clean and bright.

GOLD FOR DECORATING CHINA.

The Keystone.

Dissolve 24 grains of pure gold in 144 grains of aqua regia (1 part nitric and 3 parts hydro-chloric acid.) Let all the gold which the cold acid will dissolve do so, then stimulate with heat. To the dissolved gold add 2¼ grains of tin in small fragments at a time. Prepare some balsam of sulphur by heating half a pint of linseed oil and one ounce of flowers of sulphur, stirring the mixture until it commences to boil; then cool off by setting in cold water. Stir again and strain through a fine linen cloth; add the balsam of sulphur to the gold solution, a drop or two at a time, in a porcelain mortar, stirring constantly until the mixture is complete and the pestle will stand upright in the mortar. To this add 15 grains of oil of turpentine and again grind well. If the lustre is too pale add more gold. This mixture is to be applied only to china which has already been glazed; it will not succeed on all glazes.

PURE SILVER FROM OLD SILVER.

Dissolve the silver in nitric acid, aiding the process by heat toward the close. After the silver is all dissolved, place in the solution strips of sheet copper; the acid will attack the copper, and the silver be deposited as a fine white powder. Place this in a crucible with sal tartar and fuse into a button of pure silver.

METAL POLISH.

The Keystone.

A good polishing preparation can be made by scraping Vienna lime into a fine powder and mixing it with soft paraffine, adding a little carbonate of iron to give it the red color.

A NEW SOLDERING FLUID.

Equal parts of lactic acid and glycerine, diluted with eight parts of water.

TO ETCH SILVER.

The Keystone.

The parts to remain untouched are painted with asphaltum varnish, and the article placed in nitric acid diluted with four parts of water.

USEFUL CEMENT.

Scientific American, Dec. 12.

A cement particularly adapted for attaching the brasswork to petroleum lamps is made by boiling 3 parts resin with 1 part of caustic soda and 5 parts of water. The composition is then mixed with half its weight of plaster of paris, and sets firmly in half to three-quarters of an hour. It is of great adhesive power,

and not permeable to petroleum, a low conductor of heat, and but superficially attacked by hot water. Zinc white, white lead, or precipitated chalk may be substituted for plaster, but hardens more slowly.

TO CUT BRASS CHEMICALLY.

Make a strong solution of bichloride of mercury in alcohol, and with a quill pen draw a line across the brass at the place at which it is to be cut. Let dry on, and then with the same pen draw over the line with nitric acid. The brass may then be broken across like glass cut with a diamond.

TO SHARPEN INSTRUMENTS.

Dominion Dental Journal, May.

Dr. D. V. Beacock recommends the McLean disk, made as follows: Cut a disk of tin two inches in diameter, laying thereon a disk of cardboard and on the top of this a round piece of fine cutting emery paper; fasten them on an engine mandrel.

NITROUS OXIDE BLOWPIPE.

Texas Dental Journal, January.

Dr. O. B. Love says attach a rubber tube to a gas cylinder and to a mouth blowpipe; regulate the pressure by the screw escapement, and use an alcohol lamp.

TACKS FOR SOLDERING CLAMPS.

DR. J. E. LINE

Says use half-inch staple tacks to hold bits of gold or other plate together while soldering. Clamp them by means of pliers.

GLASS DISH FOR OPERATING TABLE.

DR. D. V. BEACOCK.

Dominion Dental Journal, May.

Take an ordinary watch crystal, set it in a lump of plaster of paris, trim neatly and paint, color or bronze to suit your taste. This makes a very handy and cheap little tray for holding amalgam or other fillings.

TO CLEAN HYPODERMIC NEEDLES.

Dr. D. V. Beacock says in Dominion Dental Journal that bristles, to be had of shoemakers, are excellent, better than wire, as they do not rust.

TO TEST VULCANIZER BOILERS.

Dental Advertiser.

An ordinary riveting hammer, or a tack hammer, will answer the purpose. When a vulcanizer pot is strong, a light blow from such a hammer upon any part of it will rebound. If it is weakened by corrosion, a blow upon a weak part will give the impression of striking lead. There will be but little rebound, and the difference in the sound of the blows between the weak and the strong parts is characteristic and very easily recognized. Very light taps, not strong enough to dent or otherwise mar the copper, are amply sufficient for the purpose of ascertaining its condition.

ARTICULATING PAPER.

DR. D. V. BEACOCK.

Dominion Dental Journal, September.

Buy a sheet of carbon paper at any stationer's, and cut it up into strips three or three and a half inches long by three-quarters wide. This makes just as good articulating paper as any. There is a red kind which is very useful in certain cases.

TO TREAT CORUNDUM WHEELS.

DR. J. E. LINE.

Odontographic Journal, April.

Keep your corundum wheels wet with water containing a few drops of alcohol. If they have become gummed, soak in a solution of caustic potash, afterwards washing in weak alcohol.

PUTZ POMADE.

Scientific American, Dec. 19.

Oxalic	1 part.
Iron peroxide	15 parts.
Rotten stone	20 parts.
Palm oil	60 parts.
Vaseline	4 parts.

This is a good polishing paste; it is poisonous.

TO COOL SOLDERED WORK.

DR. J. E. LINE.

Odontographic Journal, April.

Put gold plates, crowns, bridges, etc., direct from the fire or blaze, into an old newspaper, wrapping the paper quickly and closely about the mass. The piece will cool slowly, and in so doing rid you of all anxiety as to breakage during the cooling process.

ELECTRO GOLD PLATING.

DR. H. F. BRIGGS.

Prepare in the following manner a stock solution of gilding fluid. Take of pure gold 30 grains and digest in aqua regia; evaporate almost but not quite to dryness; dissolve this in twenty ounces of water; then add half ounce of cyanide of potassium. This fluid

will last a long while, and should be kept in a bottle ready for future use.

To Gild: Heat gilding solution in jar in saucepan of water to about 150° Fah. While this is heating polish the denture with whiting, wash well with plenty of soap, and place it in a basin of clean water; then avoid handling or exposing it to the air.

Attach to the positive electrode a thin sheet of fine gold, which should not be less in area than the piece to be gilded.

To the negative electrode attach the denture. When the gilding solution is heated, suspend the positive and negative electrodes with their attachments into it.

In a few minutes a dull brownish yellow deposit will be found on the denture. Polishing on the lathe with whiting will produce a rich, deep gold appearance, giving the plate uniformity of color, obscuring the distinctness between it and the solder, and giving a perfectly finished aspect which lasts for many years.

By using a battery of six (1 quart) Leclanche cells and keeping the sheet of gold always attached to the positive electrode, a piece can be gilded at any time in a very few minutes.

SPLINTS AND STALLS.

"H. S. W." in Dental Cosmos, December, says Head's ideal base plate makes excellent splints and stalls.

OXYCHLORIDE OF ZINC—TO MAKE.

DR. THEO. F. CHUPEIN.

Dental Office and Laboratory, March.

This material is made as follows:

Oxide of zinc	30 grs.
Borate of soda	2 grs.
Fine powdered silice	1 gr.

These ingredients are mixed thoroughly and put into a crucible. The mouth of the crucible is then covered and securely luted,

when it is subjected to a bright red heat. It is then removed from the crucible and ground to a fine powder, and then mixed with three times its weight of calcined oxide of zinc. This forms the powder. The liquid is made of deliq. chloride of zinc, one fluid ounce to which five or six fluid ounces of water are added.

OXYPHOSPHATE OF ZINC—TO MAKE.

DR. THEO. F. CHUPEIN.

Dental Office and Laboratory, March.

The oxide of zinc is calcined for two hours in a crucible properly luted at a white heat until it becomes a hard yellowish mass, when it is pulverized in a mortar and passed through a sieve of fine bolting cloth. The liquid is made by taking an ounce of German glacial phosphoric acid in crystals, dissolving this in one fluid ounce of water, and then evaporating the solution to one-third on a sand bath.

ANTISEPTIC SOAP.

Scientific American, Nov. 7.

Vigier's soap is made of 12 parts dried sulphate of copper incorporated with 88 parts of any good soap material. It has a pleasing green tint and is devoid of any irritating action.

BIRKHEAD'S SOAP.

German green soap one pound; bay rum one pint.

INGROWING TOENAILS.

Pittsburg Medical Review.

A 40 per cent. solution of potassa is applied warm to the portion of the nail to be removed. After a few seconds the uppermost layer of the nail will be so soft that it can be scraped off with a

piece of sharp-edged glass; the next layer is then moistened with the same solution and scraped off. This must be repeated until the remaining portion is as thin as a sheet of paper, when it is seized with a pincette and lifted from the underlying soft parts and severed from the other half. The operation does not require more than half an hour's time, is painless and bloodless.

STOPPING FOR DRESSINGS.

Pacific Dental Journal, October.

Dr. N. Cox says mix one part wax to four parts each of chalk and base plate gutta-percha.

FOR SWEATING HANDS.

British Journal Dermatology.

Eau de Cologne ..... 120 parts.
Tinct. Belladonna ..... 15 parts.

TO CLEAN MIXING-SLAB.

Dental Register.

Dr. W. H. Whitslar says a few drops of peroxide of hydrogen, allowed to remain on the slab a few minutes, will render the cleaning easy. Aqua ammonia will do the same.

PORCELAIN CEMENT.

Scientific American, Nov. 14.

Mix very finely ground glass 10 parts, ground fluor spar 20 parts, with a saturated solution of water glass 60 parts. Mix quickly and apply to the joints; will harden in a few days. This stands heat.

OIL STONE LUBRICANT.

Jnl. Brit. Dent. Association.

Mr. Milnes recommends two parts of glycerine and one of spirits.

ASHBERRY METAL.

Scientific American, Nov. 14.

Tin, 78 to 82 parts; antimony, 16 to 20 parts; copper, 2 to 3 parts.

TO SECURE POINTS IN PORT POLISHERS.

DR. C. E. ESTERLY.

Western Dental Journal, December.

Dr. Esterly forces the points in over a strip of rubber dam.

SOLDERING ON CHARCOAL.

DR. B. H. CATCHING.

Make smooth the end of a piece of fine grain charcoal, sufficiently large, bend toilet pins at right angle and pin the metal to the coal, with surfaces to be soldered abutting.

TEMPERING MIXTURE.

DR. PARKER.

Ohio Journal Dental Science, December.

Dr. Parker suggests that when tempering the steel taps, yellow prusiate of potassium mixed with flour and water so as to make a paste, is an excellent mixture into which the steel tap should be plunged before it is heated. It prevents the steel from scaling and thus destroying the edges of the delicate screw threads.

SYNOPSIS OF STATE LAWS

GOVERNING THE PRACTICE OF DENTISTRY IN THE UNITED STATES AND CANADA.

ALABAMA

Has a law requiring a Board of Dental Examiners, which is elected by the State Dental Association, and which meets once a year at the time and place of meeting of the State Association, and oftener if necessary. The law does not recognize diplomas. All who desire to practice dentistry in the State are required to pass an examination before the board. For a certificate of qualification from the board a fee of five dollars is allowed.

ARKANSAS

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets annually at the time and place of meeting of the State Dental Association. Diplomas of reputable dental colleges are recognized. The examination fee is five dollars.

ARIZONA

Has no law, but a bill will be presented to the next Legislature for one.

CALIFORNIA

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets once a year in San Francisco the third Monday in October, or oftener if necessary. The law recognizes diplomas of reputable dental colleges, and the holders of same are not required to be examined. There is a fee of ten dollars for examination.

COLORADO

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets semi-annually; the time and place of meeting is optional with the board, but usually

Denver is selected as the place. All who apply for license must either have a diploma or a certificate from some other State Board of Examiners. Neither a diploma nor certificate will exempt the holder from an examination. The law requires a fee of ten dollars for examination.

CONNECTICUT

Reported as having no law worth the name, but a bill has been drafted, made from other State laws, as best suits the condition, and will be presented to the next Legislature for enactment.

DELAWARE

Has a law which requires a Board of Dental Examiners, appointed by the Governor, and which meets at the call of the chairman, at the place then designated. Diplomas of reputable colleges are recognized. The reputability of colleges is determined by the board. No fee for examination is required; by law only one dollar is allowed for each certificate. The board, however, requires fees from applicants sufficient to cover the expense of a session.

DISTRICT OF COLUMBIA

Has no law.

FLORIDA

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets every six months at Jacksonville. Only those having diplomas are allowed to practice, but diplomas do not exempt from examination. There is a fee of ten dollars required for examination.

GEORGIA

Has a law requiring a Board of Dental Examiners, which is elected by the State Dental Society, and which meets annually at the time and place of meeting of the State Dental Society, or oftener if necessary, at the call of the chairman. All who desire to practice in the State are required to pass an examination. Diplomas do not exempt from examination. A fee of ten dollars is required of all applicants.

INDIANA

Has a law requiring a Board of Dental Examiners, which is appointed as follows: The State Dental Association elects three

members; the Governor appoints one, and the State Board of Health appoints one. It meets annually on the last Friday in June, at the time and place of meeting of State Dental Association. Diplomas of reputable colleges are recognized; holders of such do not have to be examined. There is a fee of five dollars for examination.

IOWA

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor from names recommended by the State Dental Society. It meets once a year on the first Tuesday in May, at the place of meeting of State Dental Society. Diplomas of reputable dental schools are recognized, and the holders of such are not examined. A fee of two dollars is charged for examination.

ILLINOIS

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets semi-annually in May and September at Springfield. Diplomas of reputable dental colleges are recognized. A fee of two dollars is charged for examination.

LOUISIANA

Has a law requiring a Board of Dental Examiners, which is elected by the State Dental Society, which is incorporated. It meets once a year, or oftener if necessary. The recognition of diplomas is left to the board; it determines the worth of each. Those having diplomas from schools recognized as reputable, are not examined. There is no fee for examination.

MAINE

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets once a year, or oftener if necessary. Diplomas are not recognized. All have to pass an examination. There is a fee of twenty dollars for examination.

MASSACHUSETTS

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor. Diplomas are not recognized. All who desire to practice in the State have to pass an examination. There is a fee of ten dollars for examination.

MARYLAND

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which is required to meet twice a year. The board has power to determine the reputability of schools and diplomas of those recognized by the board are exempt from examination. The only fee required is one dollar for registration.

MINNESOTA

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor from names recommended by the State Dental Association. It meets the first Tuesday in April and October, and usually the first week in June. To be eligible for examination by the board, applicant must possess a dental diploma or have been engaged in the practice of dentistry ten consecutive years prior to April 24, 1889. There is a fee of ten dollars for examination.

MICHIGAN

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor. It meets annually, or oftener if necessary. Before each meeting, thirty days' notice must be given to each dentist in the State. Diplomas are recognized only of schools having a course of study and practice fully equal in requirement to that of the College of Dental Surgery of the University of Michigan. There is a fee of ten dollars for examination.

MISSISSIPPI

Has a law requiring a Board of Dental Examiners, appointed by the Governor. It meets once a year. Diplomas are not recognized. All who desire to practice in the State are required to pass an examination before the board. There is a fee of five dollars for examination.

MISSOURI

Has a law which requires all who wish to practice dentistry in the State, to have a diploma from a reputable dental college. A copy of the diploma is to be filed with the clerk of the court in the county in which the applicant resides. Oath is to be made as to the genuineness of the diploma. A certificate is issued by the clerk, for which a fee of one dollar is charged.

MONTANA

Has no law, but efforts are being made to have one.

NEBRASKA

Has no Board of Dental Examiners. The law recognizes diplomas of reputable dental colleges.

NEW HAMPSHIRE

Has a law requiring a Board of Dental Examiners, appointed by the Governor, with advice of the Council. The board meets twice a year. All applicants for license to practice in the State have to pass an examination. There is a fee of five dollars for examination.

NEW JERSEY

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, on recommendation of the State Dental Society. The board meets four times a year. Only those having diplomas are eligible for examination. There is a fee of twenty-five dollars for examination.

NEW YORK

Has a law requiring a Board of Dental Examiners, (Censors it is called), which is elected by the State Dental Society. The board meets once a year. Diplomas of reputable colleges are recognized. There is no fee for examination, but a diploma is issued for which a fee of thirty dollars is charged.

NORTH CAROLINA

Has a law requiring a Board of Dental Examiners, which is elected by the State Dental Society, and which meets once a year. Diplomas are not recognized; all who desire to practice in the State, are required to pass an examination before the board. There is a fee of ten dollars for examination.

NORTH DAKOTA

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor and which meets twice a year. "The board being satisfied as to the genuineness of the diploma and qualification of the applicant, shall issue a license without a fee." A registration fee of ten dollars is charged. Annually each dentist in the State has to take out a license, for which a fee of two dollars is charged.

OHIO

Has a law requiring a Board of Dental Examiners, which is elected by the State Dental Society, and which meets once a year, or oftener if necessary. Diplomas of reputable schools are recognized. There is a fee of twenty-five dollars for examination.

OKLAHOMA

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets annually, or oftener if necessary. Diplomas of reputable dental colleges are recognized. Any person passing a satisfactory examination before the board is entitled to practice in the territory. There is a fee of ten dollars for examination.

OREGON

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets once a year; but application can be made for certificate and acted upon any time during the year. Holders of diplomas of reputable colleges are granted certificates without examination. The fees are, for those having diplomas five dollars, for those without diplomas ten dollars.

PENNSYLVANIA

Has a law requiring a Board of Dental Examiners, which is elected by the State Dental Society, and which meets once a year. Diplomas of reputable dental colleges are recognized, though the board has option in the matter. There is a fee of thirty dollars for examination.

RHODE ISLAND

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets once a year, or oftener, at the call of three members. Diplomas of reputable dental colleges are recognized, and those presenting them are required to pay a registration fee of two dollars. For examination there is a fee of twenty-five dollars.

SOUTH CAROLINA

Has a law requiring a Board of Dental Examiners, which is elected by the State Dental Society, and which meets once a year. All

who desire to practice in the State are required to pass an examination before the board, regardless of diplomas. There is a fee of fifteen dollars for examination, which includes membership fee to the State Society.

TENNESSEE

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets annually at the time and place of meeting of the State Dental Society, first Tuesday in July. Diplomas are recognized; only those not having diplomas are examined. Certificates are issued to graduates for one dollar. The fee for examination is five dollars.

TEXAS

Has a law requiring a Board of Examiners of three members for each judicial district, which are appointed by the district judges. They meet once a year. Diplomas of reputable colleges are recognized, but the holders of them must procure from one of the boards a certificate, for which a fee of five dollars is required. There is a fee of five dollars for examination.

VERMONT

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets once a year, at the time and place of meeting of the State Dental Society. Diplomas of colleges that are declared reputable by the National Board of Dental Examiners are recognized. There is a fee of five dollars for examination.

VIRGINIA

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor on recommendations made by the State Dental Society, and which meets twice a year. Diplomas are required as a prerequisite for examination. There is a fee of ten dollars for examination.

WASHINGTON

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets twice a year. Diplomas of reputable dental colleges are recognized. There is a fee of twenty-five dollars for examination.

WEST VIRGINIA

Has a law requiring a Board of Dental Examiners of three members for each congressional district, which are appointed by the Governor. They have no stated time for meeting. Diplomas of reputable colleges are recognized. Each applicant for examination is required to pay each member of the board of the district in which the examination is held, two dollars.

WISCONSIN

Has a law requiring a Board of Dental Examiners, which is appointed by the Governor, and which meets once a year, or oftener if necessary. Diplomas of reputable colleges are recognized; the applicants pay one dollar for certificate. There is a fee of ten dollars for examination.

WYOMING

Has no law.

DOMINION OF CANADA.

BRITISH COLUMBIA

Has a Board of Examiners, appointed by the Government. All practitioners are required to register. Qualification for registration, the possession of a diploma from a reputable dental college, reputability to be decided by the board; fee twenty-five dollars.

NORTHWEST TERRITORIES

Have a dental law requiring registration. Candidate must have diploma from a college which has regular courses of lectures and which requires an apprenticeship of at least two and a half years. Licentiates from the other Canadian Provinces are accepted. Certificates are issued by the clerk of the legislative assembly. No board of examiners. Fee twenty-five dollars.

MANITOBA

Has a Board of Examiners, who examine students after a certain period of pupilage. Diploma of reputable college accepted. Fee twenty-five dollars.

ONTARIO

Has a Board of Examiners, elected by the dentists legally qualified to practice. All persons entering on practice must be graduates of

the Royal College of Dental Surgeons, of Ontario. A three years' pupilage under indentures with a practitioner; attendance on two courses of lectures; examination independent of the faculty. In March next the course will probably be extended to a pupilage of three and one-half calendar years, and attendance on three courses of lectures. Graduates of other colleges are required to matriculate and attend one course of lectures and pass the final examinations.

QUEBEC.

To enter on practice in this province, candidates must comply with the whole curriculum of the Dental Association; pass high matriculation; be apprenticed for four years; attend certain university lectures in the department of medicine, and pass an examination before examiners elected by the association. College diplomas are only accepted as evidence of having attended lectures but do not exempt from examination.

NEW BRUNSWICK

Requires a diploma from a reputable college, which is registered without examination. No examiners.

NOVA SCOTIA.

Diplomas of reputable colleges accepted and registered. Non-graduates admitted to registration on examination. In Ontario the fee is forty dollars. Fees in the other provinces not known.

PUBLICATIONS.

DENTAL JOURNALS.

AMERICA—MONTHLY.

American Journal of Dental Science, Baltimore, Md., 9 West Fayette street. Editor, F. J. S. Gorgas. Publishers, Snowden & Cowman. Price, $2.50.

Archives of Dentistry, St. Louis, Mo., 800 Pine street. Editor, Jno. G. Harper. Publishers, Archives Publishing Co. Price, $2.00.

Dental Cosmos, Philadelphia, Pa., Chestnut street, corner Twelfth. Editor, E. C. Kirk. Publishers, S. S. White Dental Manufacturing Co. Price, $2.50.

Dental Register, Cincinnati, Ohio, 117 West Fifth street. Editor, J. Taft. Publishers, Samuel A. Crocker & Co. Price, $2.00.

Dental Review, Chicago, Ill., 66 Madison street. Editor, A. W. Harlan. Publisher, H. D. Justi. Price, $2.50.

International Dental Journal, Philadelphia, Pa., 716 Filbert street. Editor, James Truman. Publishers, International Dental Publication Co. Price, $2.50.

Items of Interest, Philadelphia, Pa., 1413 Filbert street. Editor, T. B. Welch. Publishers, Wilmington Dental Manufacturing Co. Price, $1.00.

Ohio Journal of Dental Science, Toledo, Ohio, 83 Jefferson street. Editors, George Watt and L. P. Bethell. Publishers, Ransome & Randolph. Price, $2.00.

Southern Dental Journal, Atlanta, Ga. Editor, H. H. Johnson, Macon, Ga. Publishers, Holliday Brothers. Price, $1.00.

Western Dental Journal, Kansas City, Mo., 900 Grand avenue. Editors, J. D. Patterson and H. L. Hungerford. Publishers, R. I. Pearson & Co. Price, $2.00.

BI-MONTHLY.

Dental Office and Laboratory, Philadelphia, Pa., 620 Race street. Editor, Theodore F. Chupein. Publishers, Johnson & Lund. Price, $1.00.

Dominion Dental Journal, Toronto, Canada, Postoffice box 298. Editor, W. George Beers. Publishers, Dominion Dental Journal Co. Price, $1.00.

QUARTERLY.

Dental Practitioner and Advertiser, Buffalo, N. Y., Court and Pearl streets. Editor, W. C. Barrett. Publishers, Buffalo Dental Manufacturing Co. Price, $1.00.

Dental Headlight, Nashville, Tenn., 216 North Summer street. Editors, Ambrose Morrison and H. W. Morgan. Publishers, Morrison Brothers. Price, 50 cents.

Dental Luminary, Macon, Ga. Editors, W. R. Holmes and Mason. Publishers, W. R. Holmes and Mason. Price, 50 cents.

Odontographic Journal, Rochester, N. Y., 117–119 State street. Editor, J. Edward Line. Publisher, George P. Davis. Price, $1.00.

Pacific Dental Journal, Tacoma, Washington. Editor, W. E. Burkhart. Published by the Burkhart Dental Supply Co. Price, $1.00.

Texas Dental Journal, Dallas, Tex., 719 Elm street. Editor, J. C. Storey. Publisher, A. P. Cary. Price, 50 cents.

ENGLAND—SEMI-MONTHLY.

British Journal of Dental Science, London, 289-291 Regent street. Publishers, J. P. Segg & Co. Price, 6d.

MONTHLY.

Dental Record, London, 6 to 10 Lexington street, Golden Square. Publishers, The Dental Manufacturing Co. Price 6d, or 7s. 6d.

Journal of the British Dental Association, London, 20 and 21 King William street, Strand. Publishers, Balliere, Tindall & Cox. Price, 6d., or 7s. an.

FRANCE—MONTHLY.

L'Odontologie, Paris, 2 Rue Amsterdam. Publisher, P. Dubois. Price, 10 francs an.

Le Progress Dentaire, Paris, 22 Rue 4m Septembre. Publishers, C. Ash & Sons. Price, 10 francs an.

Le Monde Dentaire, Paris, 37 Rue de la Chaussé d'Antin. Publisher, Paul Vasseur. Price, 3 franc an.

Revue Dentaire, Paris, 3 Rue de la Paix. Publisher, Dr. Sicard.

Revue Odontologique, Paris, 3 Rue de l'Abbaye. Publishers, L'Association de l'Ecole. Price, 10 francs an.

GERMANY—WEEKLY.

Zahnarztliches Wochenblatt, Hamburg, Dr. Andræ, Zahnart. Price, 6 marks p. an.

Journal fur Zahnheilkunde, Berlin, 4 Chausseestrasse. Erich Richter. Price, 6 marks.

MONTHLY.

Monatsschrift des Vereins Deutsche Zahnkunstler, Leipsig, Konigsplatz 17-11. Arthur Stolper. Price, 9 marks p. an.

Deutsche Monatsschrift fur Zahnheilkunde, Leipsig, Konigastrasse 18. Arthur Felix. Price, 14 marks p. an.

BI-MONTHLY.

Die Zahntechnische Reform, Berlin, Kurstrasse 18-19. M. Niethe. Price, 7 marks.

QUARTERLY.

Correspondenz-blatt fur Zahnarzte, Berlin. C. Ash & Sons. Price, 5 marks.

AUSTRIA—QUARTERLY.

Oesterreichisch-Ungarische Vierteljahrsschrift fur Zahnheilkunde, Vienna, l'Fleischmarkt. Julius Weiss. Price, 5 marks p. an.

CUBA—MONTHLY.

El Progresso Dental, Havana, Lealtad 137.

Cronics Dental, Havana, Armagua 90.

ITALY—MONTHLY.

La Scienza Dentaria Revista Mensile, Florence.

BI-MONTHLY.

L'Odontologia. Editor, L. Ribolla-Nicodemi. Palermo.

QUARTERLY.

Giornale di Correspondenza pei Dentista, Milano.

RUSSIA—MONTHLY.

Messager Odontologique, St. Petersburg, Newsky 75.

SPAIN—MONTHLY.

Reportio Dental, Seville.

SWITZERLAND—QUARTERLY.

Schweizerische Vierteljahrsschrift fur Zahnheilkunde. Editor, Prof. C. Redard. Publishers, La Societe Odontologique Suisse. Price, 10 francs an.

BOOKS AND PAMPHLETS PERTAINING TO DENTISTRY PUBLISHED DURING THE YEAR.

BOOKS.

Compend of Chemistry, Inorganic and Organic; by Henry Leffman, M. D., D. D. S. Published by P. Blakiston Son & Co., Philadelphia, Pa.

Compendium of Practical Dentistry for 1890; by B. H. Catching, D. D. S., Atlanta, Ga.

Dictionary of Dental Science, (Harris fifth edition); by F. J. S. Gorgas, A. M., M. D., D. D. S. Published by P. Blakiston Son & Co., Philadelphia, Pa.

Dental Medicine; by F. J. S. Gorgas, A. M., M. D., D. D. S. Published by P. Blakiston Son & Co., Philadelphia, Pa.

Questions and Answers in Dental Pathology and Hygiene, and Care of the Teeth; by Gustavus North, A. M., D. D. S., Chicago, Ill.

PAMPHLETS.

American Dentistry; by W. H. H. Thackston, Farmville, Va.

Comparative Dental Anatomy; by W. C. Barrett, M. D., D. D. S., Baffalo, N. Y.

Correcting Irregularities; by V. H. Jackson, New York, N. Y.

Double Fracture of the Lower Jaw; by T. W. Brophy, M. D., D. D. S., Chicago, Ill.

Facial Expression and its Psychology; by A. H. Thompson, D. D. S., Topeka, Kan.

Illiberal Patent Methods in Dentistry, and Legislative Measures to Prevent Dentists Therefrom; by W. F. Rehfuss, D. D. S., Philadelphia, Pa.

Manual of Dental Education; by Arthur Turner, L. R. C. P. E., Edinburgh.

Preparation of Microscopical Sections of Teeth and Bone; by J. H. Mummery, M. R. C. S., L. D. S., London.

Treatment of Root Canals; by J. J. Jennelle, D. D. S., Cairo, Ill.

The Art of Expression in its Relation to Prosthesis; by J. H. Woolley, Chicago, Ill.

UNIVERSITY OF PENNSYLVANIA.

DEPARTMENT OF DENTISTRY.

Thirty-sixth St. and Woodland Ave., Philadelphia, Pa.

FACULTY.

WILLIAM PEPPER, M.D., LL.D., PROVOST, and *ex-officio* President.

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EDWIN T. DARBY, M.D., D D.S., Professor of *Operative Dentistry* and *Dental Histology*.
JAMES TRUMAN, D.D.S., Professor of *Dental Pathology, Therapeutics* and *Materia Medica*.
THEODORE G. WORMLEY, M.D., LL.D., Professor of *Chemistry*.
EDWARD T. REICHERT, M.D., Professor of *Physiology*.
GEORGE A. PIERSOL, M.D , Professor of *Anatomy*.
JOHN MARSHALL, M.D., NAT. SC. D., Assistant Professor of *Chemistry*.

ROBERT HUEY, D.D.S., Lecturer on *Operative Dentistry*.
EDWARD C. KIRK, D.D.S., Lecturer on *Operative Dentistry*.
JOHN D. THOMAS, D.D S., Lecturer on *Nitrous Oxide*.

CLINICAL INSTRUCTORS.

DR. C. S. BECK,
DR. W. G. A. BONWILL,
DR. GEO. W. KLUMP,
DR. E. H. NEALL,
DR. H. C. REGISTER.
DR. W. R. MILLARD,
DR. R. R. UNDERWOOD,
DR. I. F. WARDWELL,
DR. J. A. WOODWARD.

DEMONSTRATORS.

WILLIAM DIEHL, D.D.S., Demonstrator of *Operative Dentistry*.
JOSEPH W. WHITE, D.D.S., Assistant Demonstrator of *Operative Dentistry*.
JAMES E. LODER, D.D.S., Assistant Demonstrator of *Operative Dentistry*.
J. E. DUNWOODY, D.D.S., Assistant Demonstrator of *Operative Dentistry*.
CHARLES A. E. CODMAN, D.D.S., Assistant Demonstrator of *Operative Dentistry*.
R. HAMILL D. SWING, D.D.S., Assistant Demonstrator of *Operative Dentistry*.
JUSTINO S. DILK, D.D.S., Assistant Demonstrator of *Operative Dentistry*.
HARRY B. McFADDEN, D.D.S., Demonstrator of *Mechanical Dentistry*.
AMBLER TEES, JR., D.D S., Assistant Demonstrator of *Mechanical Dentistry* and Demonstrator of *Continuous Gum Work*.
FREDERICK W. AMEND, JR., D.D.S., Assistant Demonstrator of *Mechanical Dentistry*.
MILTON N. KEIM, JR., D.D.S., Assistant Demonstrator of *Mechanical Dentistry*.
C. HERBERT WILSON, D.D.S., Assistant Demonstrator of *Mechanical Dentistry*.
FREDERICK A. PEESO, D.D.S., Demonstrator of *Crown and Bridge Work*.
JAMES G. LANE, D.D.S., Assistant Demonstrator of *Crown and Bridge Work*.
EDMUND W. HOLMES, M.D., Demonstrator of *Anatomy*.

SESSIONS.

The *Winter Session* begins on October 1st, and ends at Commencement, early in May. The number of lectures per week, with a synopsis of the various branches taught, will be found in the General Catalogue.

The *Spring Session* begins the first Monday in May and ends the last of June. The work of this session is entirely practical; no lectures are delivered.

EXAMINATIONS.

Attendance upon three regular winter courses of lectures will be required before the final examination for the degree of Doctor of Dental Surgery.

At the close of the first year, examinations are held in *Chemistry, Histology* and *Dental Materia Medica;* the end of the second year upon *Anatomy* and *Physiology.* If the student is not qualified, a second examination is afforded him at the beginning of the next winter session.

The final examination at the end of the course is in *Operative Dentistry, Mechanical Dentistry, Metallurgy, Dental Pathology* and *Therapeutics.*

All applicants for advanced standing must pass the required examinations of this school, or furnish proof that they have passed *equivalent* examinations in some recognized dental or medical school.

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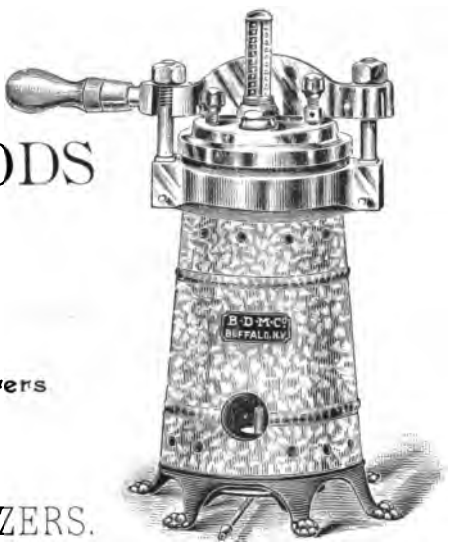

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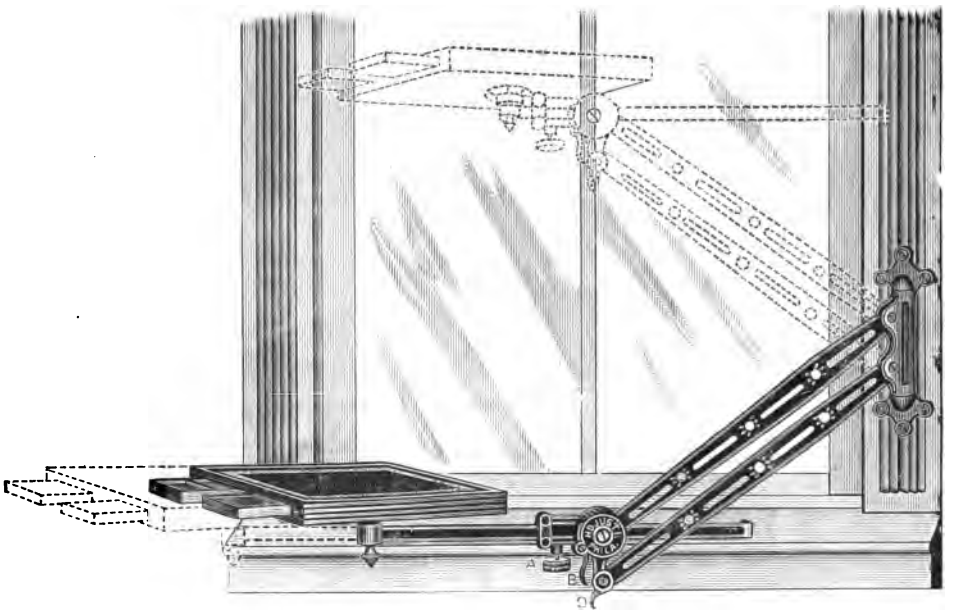

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